



## **QUARTERLY GROUNDWATER MONITORING REPORT**

**Second Quarter 2005 (Twelfth Quarterly)**

**Sampled on May 13, 2005**

**Job # SP-120**

**LOP # 12365**

**Big Oil & Tire - Bigfoot Service Station (Bigfoot Gas)**

2801 Central Avenue  
McKinleyville, California 95519

June 28, 2005

This *Quarterly Groundwater Monitoring Report* was prepared by SounPacific Environmental Services (SounPacific) staff for Big Oil & Tire Co. (BO&T), using previous studies that were conducted by Clearwater Group, Inc. (CGI) and file review conducted at Humboldt County Department of Health and Human Services: Division of Environmental Health (HCDEH). The station is located at 2801 Central Avenue in McKinleyville, California (Figure 1).

### **SITE DESCRIPTION**

The site is surfaced around the current structure with concrete and asphalt. Site improvements include a single story building with an attached, overhead awning that covers the main dispenser islands. The main structure covers approximately 800 square feet and is positioned near the center of the property with the entrance to the building facing west towards Central Avenue. Attached to the main structure is a small out building at the north end of the property that is used for storage (Figure 2).

Two (2) 12,000-gallon split compartmented underground storage tanks (USTs) are located in a single excavation between the station and Central Avenue and are used for the storage of three (3) grades of unleaded gasoline and diesel fuel. Fuel is dispensed from two (2) main dispenser islands, which are located under the awning. BO&T owns, operates and is therefore responsible for the maintenance and testing of the product lines and the UST system on a regular basis. The site is serviced by public utilities. Surface water is controlled by drainage ditches and storm drains (Figure 2).

## **SITE TOPOGRAPHY AND LAND USE**

SounPacific understands that the property is currently owned by BO&T of Arcata, California. The main structure is used as a retail gas station for the dispensing of three (3) grades of unleaded gasoline and diesel fuel from the USTs on site. On the north section of the property, a commercial propane tank is stored and used for the filling of smaller propane tanks for the public (Figure 2). The surrounding land use is a mixture of commercial and residential. An automobile garage is located immediately to the south across Murray Road, and properties adjacent to the east, west and north are undeveloped.

The site is approximately two (2) miles east of the Pacific Ocean and approximately 110 feet above mean sea level (MSL). The site is situated approximately 600 feet South of Norton Creek and 1,400 feet North of Widow White Creek. According to the United States Geological Survey Arcata North Quadrangle California-Humboldt County, 7.5 minute series (Topographic) 1959 (photo-revised 1972), a tributary of Norton Creek is re-routed into an underground culvert along the South side of the site. Norton Creek is also artificially controlled along the eastern side of Central Avenue near the site. These two engineered drainage features intersect near the southwestern corner of the property and flow west, toward the Pacific Ocean (Figure 2). It is uncertain if the engineered drainage along the southern and western boundaries of the site will exhibit any hydraulic influence on groundwater flow directly beneath the site. Topography consists of rolling terrain that gently slopes west toward the Pacific Ocean (Figure 1).

## **RESULTS OF QUARTERLY SAMPLING**

A quarterly groundwater monitoring program was implemented on July 15, 2002, and will continue until further notice. The program consists of recording quarterly water level data and collecting quarterly groundwater samples for laboratory analysis. Water level data is used to develop a figure which displays the groundwater gradient and average flow direction using standard three-point calculations. Analytical results from groundwater samples collected from the monitoring wells during quarterly sampling events present hydrocarbon contamination levels in the groundwater beneath the site. Monitoring wells were gauged and sampled on May 13, 2005.

### **FIELD DATA**

<b>Wells gauged:</b>	MW-1, 2, 3, 4, 5, and 6
<b>Groundwater:</b>	Ranged from 110.15 to 111.38 feet above mean sea level (Table 1)
<b>Floating product:</b>	No sheen detected
<b>GW flow Direction:</b>	West (Figure 3)
<b>GW gradient:</b>	0.01 feet per foot (ft/ft) (Figure 3)

On May 13, 2005 the depth to groundwater in the site's six monitoring wells ranged from 1.24 feet below top of casing (btoc) in well MW-5 to 2.57 feet btoc in MW-2. When corrected to mean sea-level, water level elevations ranged from 110.15 feet above mean sea-level (amsl) in MW-3 to 111.38 feet amsl in MW-5. Groundwater levels for the May 13, 2005, monitoring event, along with historical levels and elevations are included in Table 1. Groundwater flow on May 13, 2005, was generally flat with a gradient towards the West at 0.01 feet per foot. The groundwater flow and gradient are graphically depicted in Figure 3. Prior to sampling, all wells were purged; the groundwater field parameters for each well are presented below.

**MONITORING WELL MW-1 GROUNDWATER FIELD PARAMETERS**

<b>Time</b>	<b>Total Vol. Removed/ gal</b>	<b>pH</b>	<b>Temp./ F</b>	<b>Cond./ ms(cm)<sup>-1</sup></b>
3:54	0	7.41	58.81	0.179
3:58	1.75	7.38	56.63	0.174
4:02	3.5	7.33	56.15	0.168
4:06	5.25	7.23	55.80	0.160

**MONITORING WELL MW-2 GROUNDWATER FIELD PARAMETERS**

<b>Time</b>	<b>Total Vol. Removed/ gal</b>	<b>pH</b>	<b>Temp./ F</b>	<b>Cond./ ms(cm)<sup>-1</sup></b>
2:47	0	6.78	57.77	0.542
2:50	1.0	6.66	55.97	0.654
2:52	2.3	6.70	55.84	0.638
2:54	3.0	6.82	55.74	0.541

**MONITORING WELL MW-3 GROUNDWATER FIELD PARAMETERS**

<b>Time</b>	<b>Total Vol. Removed/ gal</b>	<b>pH</b>	<b>Temp./ F</b>	<b>Cond./ ms(cm)<sup>-1</sup></b>
4:26	0	7.34	60.51	0.123
4:31	1.5	7.00	58.55	0.290
4:35	3.0	6.95	58.16	0.288
4:37	4.5	6.94	58.27	0.284

**MONITORING WELL MW-4 GROUNDWATER FIELD PARAMETERS**

<b>Time</b>	<b>Total Vol. Removed/ gal</b>	<b>pH</b>	<b>Temp./ F</b>	<b>Cond./ ms(cm)<sup>-1</sup></b>
3:19	0	7.12	60.24	0.280
3:23	1.5	7.07	59.80	0.279
3:26	3.0	7.08	60.79	0.289
3:28	4.5	7.07	59.93	0.260

**MONITORING WELL MW-5 GROUNDWATER FIELD PARAMETERS**

<b>Time</b>	<b>Total Vol. Removed/ gal</b>	<b>pH</b>	<b>Temp./ F</b>	<b>Cond./ ms(cm)<sup>-1</sup></b>
5:25	0	7.19	60.38	0.240
5:29	1.6	7.12	58.99	0.243
5:31	3.2	7.06	58.37	0.269
5:33	4.8	7.02	58.13	0.276

**MONITORING WELL MW-6 GROUNDWATER FIELD PARAMETERS**

<b>Time</b>	<b>Total Vol. Removed/ gal</b>	<b>pH</b>	<b>Temp./ F</b>	<b>Cond./ ms(cm)<sup>-1</sup></b>
4:53	0	6.97	62.4	0.144
5:00	1.4	6.82	58.96	0.177
5:03	2.8	6.83	58.86	0.176
5:06	4.2	6.84	58.93	0.177

**ANALYTICAL RESULTS**

**Sampling locations:** MW-1, 2, 3, 4, 5, and 6

**Analyses performed:** TPHg, BTXE, MTBE, DIPE, TAME, ETBE, TBA, TPHd, TPHmo

**Laboratories Used:** Basic Labs, Redding, California

The analytical results for the current monitoring event are presented below and graphically depicted in Figure 4. The laboratory report is included as Appendix A. The historical analytical results for all monitoring wells, since the implementation of groundwater monitoring are included as Table 2.

	<u>MW-1</u> (ppb)	<u>MW-2</u> (ppb)	<u>MW-3</u> (ppb)	<u>MW-4</u> (ppb)	<u>MW-5</u> (ppb)	<u>MW-6</u> (ppb)
<b>TPHg:</b>	ND < 50	<b>658</b>	<b>183</b>	<b>3,950</b>	<b>12,600</b>	ND < 50
<b>Benzene:</b>	ND < 0.5	ND < 2.0	ND < 1.2	<b>31.4</b>	ND < 10	ND < 0.5
<b>Toluene:</b>	ND < 0.5	ND < 2.0	ND < 1.2	<b>80.4</b>	<b>197</b>	ND < 0.5
<b>Xylenes:</b>	ND < 1.0	ND < 4.0	ND < 2.5	<b>493</b>	<b>4,050</b>	ND < 1.0
<b>Ethylbenzene:</b>	ND < 0.5	ND < 2.0	ND < 1.2	<b>193</b>	<b>393</b>	ND < 0.5
<b>MTBE:</b>	ND < 1.0	<b>533</b>	<b>163</b>	ND < 5.0	ND < 20	<b>2.1</b>
<b>DIPE:</b>	ND < 0.5	ND < 2.0	ND < 1.2	ND < 2.5	ND < 10	ND < 0.5
<b>TAME:</b>	ND < 0.5	<b>241</b>	<b>52.6</b>	ND < 2.5	ND < 10	<b>0.8</b>
<b>ETBE:</b>	ND < 0.5	ND < 2.0	ND < 1.2	ND < 2.5	ND < 10	ND < 0.5
<b>TBA:</b>	ND < 50	ND < 200	ND < 125	ND < 250	ND < 1,000	ND < 50
<b>TPHd:</b>	ND < 50	<b>136</b>	<b>70</b>	<b>708</b>	<b>1,190</b>	ND < 50
<b>TPHmo:</b>	ND < 50	<b>120</b>	<b>84</b>	<b>106</b>	<b>113</b>	<b>71</b>

ND = non-detectable

## COMMENTS AND RECOMMENDATIONS

On May 13, 2005, the 12<sup>th</sup> groundwater monitoring event for the six on-site monitoring wells was conducted at the Bigfoot Gas Station at 2801 Central Avenue in McKinleyville, California. A summary of the results are presented below.

- The depth to groundwater in the six wells ranged between 1.24 and 2.57 feet btoc. Groundwater flow was towards the West at a gradient of 0.01 feet per foot.
- Groundwater samples from the six on-site wells were collected and analyzed for TPHg, BTXE, five-fuel oxygenates, TPHd, and TPHmo. Laboratory results reported TPHg in four wells at concentrations ranging from 183 ppb (MW-3) to 12,600 ppb (MW-5). Benzene was reported in one well at a concentration of 31.4 ppb (MW-4). Toluene was reported in two wells at concentrations of 80.4 ppb (MW-4) and 197 ppb (MW-5).

Xylenes were reported in two wells at concentrations of 493 ppb (MW-4) and 4,050 ppb (MW-5). Ethylbenzene was reported in two wells at concentrations of 193 ppb (MW-4) and 393 ppb (MW-5). Of the fuel oxygenates, MTBE was reported in three wells at concentrations ranging from 2.1 ppb (MW-6) and 533 ppb (MW-2); TAME was reported in three wells at concentrations ranging between 0.8 ppb (MW-6) and 241 ppb (MW-2); No other fuel oxygenates were reported. TPHd was reported in four wells at concentrations ranging from 70 ppb (MW-3) to 1,190 ppb (MW-5). TPHmo was reported in five wells at concentrations ranging from 71 ppb (MW-6) to 120 ppb (MW-2).

Based upon these results the following observations and conclusions have been made.

- TPHg has been absent in monitoring well MW-1, since the 4<sup>th</sup> Quarter 2002 sampling event. TPHg has been consistently detected in well MW-2 at high concentrations, except for the 3<sup>rd</sup> Quarter 2003, in which the detection limits were raised to 5,000 ppb. Concentrations of TPHg have been detected in wells MW-3 and MW-6 at various times and seem to be fluctuating. The highest concentrations of TPHg have been consistently detected in wells MW-4 and MW-5 since the inception of the monitoring program. See Figures 5 through 10.
- No BTXE compounds have been reported in MW-1 since the Well Installation sampling event. BTXE has been reported in wells MW-2, MW-3 and MW-6 during various sampling events at fluctuating concentrations. BTXE has been reported in wells MW-4 and MW-5 at high levels for the majority of sampling events to date at fluctuating concentrations. See Figures 5 through 10.
- MTBE has been reported in wells MW-2 and MW-3 during every sampling event thus far. Concentrations fluctuate in the range of  $10^3$  ppb in MW-2 and from  $10^2$  to  $10^3$  ppb in MW-3. With the exception of a few monitoring events, MTBE has consistently been reported in wells MW-1, MW-4, and MW-6, with a general decreasing trend in concentration in MW-4 and 6, particularly in well MW-6. MTBE has not been reported in MW-5 since the 4<sup>th</sup>

Quarter 2002 sampling event, although the elevated reporting limit may be masking its presence. See Figures 5 through 10.

- DIPE has not been reported in any wells since the inception of the monitoring program.
- TAME has consistently been reported in wells MW-2 and MW-3, since the inception of the monitoring, although concentrations in these wells have significantly fluctuated. In MW-6, TAME has been detected during multiple sampling events, with an overall decrease in concentrations. TAME has been reported in MW-1 during multiple sampling events at low concentrations. TAME was reported one time in MW-5 and three times in MW-4.
- ETBE has only been reported three times in well MW-2 since the inception of the monitoring program.
- TBA has occasionally been reported in wells MW-2, MW-3, and MW-6, but has not been reported in MW-1, MW-4, or MW-5.
- TPHd has frequently been reported in wells MW-4, MW-5, and MW-6, with concentrations varying from  $10^2$  to  $10^3$  ppb since the inception of groundwater monitoring. TPHd was reported in MW-2 consistently during the last eight sampling events and in MW-3 during the last five sampling events. With the exception of the 3<sup>rd</sup> Quarter 2004 monitoring event, TPHd has not been reported in MW-1. See Figures 5 through 10.
- TPHmo has been reported three times in both MW-5 and MW-6 since the inception of the monitoring; two of those times were during the last two quarterly events. TPHmo was reported twice in wells MW-2, MW-3, and MW-4 during the last two quarters. The lower reporting limit used currently, may portray the TPHmo trend more accurately in upcoming monitoring events.
- Lead scavengers as EDC have been reported at low concentrations ( $< 2$  ppb) during



multiple events in MW-3. EDC was also reported in MW-6 during the 2<sup>nd</sup> Quarter 2003. EDC and EDB have not been reported in any other well since the inception of monitoring, however, EDC and EDB sampling has been discontinued this quarter per the letter from HCDEH dated March 17, 2005.

Based on the results of the May 2005 monitoring event and historical results, the following future activities are proposed.

- Groundwater monitoring will be continued until further notice. Groundwater level measurements will be collected from the six on-site monitoring wells to determine groundwater flow direction and gradient. Collected groundwater samples will be analyzed for TPHg, BTXE, five fuel oxygenates, TPHd, and TPHmo.
- Groundwater analytical results from the monitoring program have indicated that potential primary or secondary sources may still exist and might be contributing mass to the observed groundwater plume. To determine if this is the case, SounPacific is currently preparing the Subsurface Investigation Workplan as requested in a letter dated, July 14, 2003 by HCDEH.

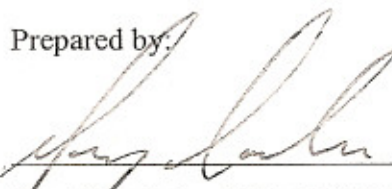
## CERTIFICATION

This report was prepared under the direct supervision of a California registered geologist at SounPacific. All information provided in this report including statements, conclusions and recommendations are based solely on field observations and analyses performed by a state-certified laboratory. SounPacific is not responsible for laboratory errors.

SounPacific promises to perform all its work in a manner that is used by members in similar professions working in the same geographic area. SounPacific will do whatever is reasonable to ensure that data collection is accurate. Please note however, that rain, buried utilities, and other factors can influence groundwater depths, directions and other factors beyond what SounPacific could reasonably determine.

### **SounPacific**

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## **ATTACHMENTS**

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### **APPENDICES**

- Appendix A: Laboratory Report and Chain-of-Custody Form  
Appendix B: Standard Operating Procedures  
Appendix C: Field Notes

## **Tables & Chart**

**Table 1**  
**Water Levels**

Bigfoot Gas  
2801 Central Avenue  
McKinleyville, California 95519

Sample Location	Date	Depth to Bottom/ Feet BGS	Survey Height/ Feet Above MSL	Depth to Water/ Feet BGS	Adjusted Elevation/ Feet Above MSL
MW-1	5/1/2002	11.66	111.57	1.54	110.03
	5/30/2002	11.67	111.57	2.43	109.14
	7/3/2002	11.63	111.57	2.65	108.92
	8/3/2002	11.62	111.57	3.40	108.17
	9/4/2002	11.64	111.57	3.90	107.67
	10/4/2002	11.70	111.57	4.25	107.32
	11/4/2002	11.65	111.57	4.36	107.21
	12/2/2002	12.63	111.57	3.61	107.96
	1/6/2003	11.66	111.57	1.22	110.35
	2/5/2003	11.67	111.57	1.31	110.26
	3/7/2003	11.67	111.57	1.67	109.90
	4/8/2003	11.67	111.57	1.00	110.57
	5/12/2003	11.67	111.57	1.32	110.25
	8/2/2003	11.88	111.57	3.11	108.46
	11/8/2003	11.88	111.57	2.57	109.00
	2/5/2004	11.88	111.57	1.21	110.36
	5/4/2004	11.88	111.57	2.03	109.54
	8/9/2004	11.82	111.57	3.71	107.86
	11/5/2004	11.83	111.57	2.08	109.49
	2/6/2005	11.83	111.57	1.65	109.92
	5/13/2005	11.81	111.57	1.32	110.25
MW-2	5/1/2002	12.00	113.03	2.75	110.28
	5/30/2002	11.85	113.03	3.63	109.40
	7/3/2002	11.87	113.03	4.20	108.83
	8/3/2002	11.87	113.03	4.68	108.35
	9/4/2002	11.87	113.03	5.22	107.81
	10/4/2002	9.71	113.03	5.64	107.39
	11/4/2002	11.82	113.03	5.67	107.36
	12/2/2002	11.83	113.03	4.83	108.20
	1/6/2003	11.86	113.03	2.46	110.57
	2/5/2003	10.22	113.03	2.52	110.51
	3/7/2003	11.72	113.03	2.71	110.32
	4/8/2003	11.72	113.03	2.22	110.81
	5/12/2003	11.72	113.03	2.53	110.50
	8/2/2003	11.98	113.03	4.31	108.72
	11/8/2003	11.98	113.03	3.95	109.08
	2/5/2004	11.98	113.03	2.44	110.59
	5/4/2004	11.98	113.03	3.24	109.79
	8/9/2004	11.97	113.03	5.07	107.96
	11/5/2004	12.04	113.03	3.26	109.77
	2/6/2005	12.04	113.03	2.79	110.24
	5/13/2005	9.12	113.03	2.57	110.46

**Table 1 (cont.)****Water Levels**

Bigfoot Gas

2801 Central Avenue

McKinleyville, Californian 95519

Sample Location	Date	Depth to Bottom/ Feet BGS	Survey Height/ Feet Above MSL	Depth to Water/ Feet BGS	Adjusted Elevation/ Feet Above MSL
MW-3	5/1/2002	11.39	112.13	2.15	109.98
	5/30/2002	11.24	112.13	2.94	109.19
	7/3/2002	11.25	112.13	3.41	108.72
	8/3/2002	11.24	112.13	3.84	108.29
	9/4/2002	11.21	112.13	4.32	107.81
	10/4/2002	11.22	112.13	4.69	107.44
	11/4/2002	11.22	112.13	4.83	107.30
	12/2/2002	11.23	112.13	4.02	108.11
	1/6/2003	11.25	112.13	1.91	110.22
	2/5/2003	11.25	112.13	2.00	110.13
	3/7/2003	11.29	112.13	2.30	109.83
	4/8/2003	11.29	112.13	1.69	110.44
	5/12/2003	11.29	112.13	1.99	110.14
	8/2/2003	11.46	112.13	3.57	108.56
	11/8/2003	11.46	112.13	3.00	109.13
	2/5/2004	11.46	112.13	1.91	110.22
	5/4/2004	11.46	112.13	2.61	109.52
	8/9/2004	11.46	112.13	4.14	107.99
	11/5/2004	11.40	112.13	2.67	109.46
	2/6/2005	11.40	112.13	2.30	109.83
	5/13/2005	11.42	112.13	1.98	110.15
MW-4	5/1/2002	11.34	112.76	2.44	110.32
	5/30/2002	11.14	112.76	3.28	109.48
	7/3/2002	11.11	112.76	3.84	108.92
	8/3/2002	11.14	112.76	4.32	108.44
	9/4/2002	11.12	112.76	4.86	107.90
	10/4/2002	11.12	112.76	5.24	107.52
	11/4/2002	11.05	112.76	5.36	107.40
	12/2/2002	11.08	112.76	4.51	108.25
	1/6/2003	11.05	112.76	2.04	110.72
	2/5/2003	11.06	112.76	2.17	110.59
	3/7/2003	11.24	112.76	2.51	110.25
	4/8/2003	11.24	112.76	1.69	111.07
	5/12/2003	11.24	112.76	3.14	109.62
	8/2/2003	11.32	112.76	4.03	108.73
	11/8/2003	11.32	112.76	3.31	109.45
	2/5/2004	11.32	112.76	2.03	110.73
	5/4/2004	11.32	112.76	2.85	109.91
	8/9/2004	11.32	112.76	4.64	108.12
	11/5/2004	11.20	112.76	2.87	109.89
	2/6/2005	11.27	112.76	2.51	110.25
	5/13/2005	11.24	112.76	2.14	110.62

**Table 1 (cont.)**  
**Water Levels**  
 Bigfoot Gas  
 2801 Central Avenue  
 McKinleyville, California 95519

Sample Location	Date	Depth to Bottom/ Feet BGS	Survey Height/ Feet Above MSL	Depth to Water/ Feet BGS	Adjusted Elevation/ Feet Above MSL
MW-5	5/1/2002	11.10	112.62	1.43	111.19
	5/30/2002	11.11	112.62	2.71	109.91
	7/3/2002	11.12	112.62	3.31	109.31
	8/3/2002	11.14	112.62	3.85	108.77
	9/4/2002	11.12	112.62	4.37	108.25
	10/4/2002	11.15	112.62	4.85	107.77
	11/4/2002	11.15	112.62	4.97	107.65
	12/2/2002	11.13	112.62	4.02	108.60
	1/6/2003	11.15	112.62	1.11	111.51
	2/5/2003	11.18	112.62	1.23	111.39
	3/7/2003	11.15	112.62	1.70	110.92
	4/8/2003	11.15	112.62	0.95	111.67
	5/12/2003	11.15	112.62	1.33	111.29
	8/2/2003	11.36	112.62	3.53	109.09
	11/8/2003	11.36	112.62	2.67	109.95
	2/5/2004	11.36	112.62	1.10	111.52
	5/4/2004	11.36	112.62	2.18	110.44
	8/9/2004	11.35	112.62	4.17	108.45
	11/5/2004	11.34	112.62	2.19	110.43
	2/6/2005	11.32	112.62	1.62	111.00
	5/13/2005	11.30	112.62	1.24	111.38
MW-6	5/1/2002	10.92	112.38	2.31	110.07
	5/30/2002	10.91	112.38	3.13	109.25
	7/3/2002	10.91	112.38	3.64	108.74
	8/3/2002	10.92	112.38	4.09	108.29
	9/4/2002	10.93	112.38	4.61	107.77
	10/4/2002	10.96	112.38	4.99	107.39
	11/4/2002	10.92	112.38	5.05	107.33
	12/2/2002	10.93	112.38	4.27	108.11
	1/6/2003	10.93	112.38	2.05	110.33
	2/5/2003	10.95	112.38	2.14	110.24
	3/7/2003	10.95	112.38	2.46	109.92
	4/8/2003	10.95	112.38	1.82	110.56
	5/12/2003	10.95	112.38	3.12	109.26
	8/2/2003	11.13	112.38	3.81	108.57
	11/8/2003	11.13	112.38	3.03	109.35
	2/5/2004	11.13	112.38	2.07	110.31
	5/4/2004	11.13	112.38	2.75	109.63
	8/9/2004	11.18	112.38	4.39	107.99
	11/5/2004	11.03	112.38	2.76	109.62
	2/6/2005	11.04	112.38	2.44	109.94
	5/13/2005	10.95	112.38	2.06	110.32

Notes:

Bgs: Below Ground Surface

MSL: Mean Sea Level

**Table 2**  
**Groundwater Analytical Results from Monitoring Wells**

Bigfoot Gas  
2801 Central Avenue  
McKinleyville, California 95519

Sample Location	Sample Event	Annual Quarter	Sample Date	TPHg (ppb)	Benzene (ppb)	Toluene (ppb)	Xylenes (ppb)	Ethylbenzene (ppb)	MTBE (ppb)	DIPE (ppb)	TAME (ppb)	ETBE (ppb)	TBA (ppb)	TPHd (ppb)	TPHmo (ppb)	EDC (ppb)	EDB (ppb)
MW-1	Well Installation	2nd Quarter	5/1/2002	ND < 50	ND < 0.3	<b>0.3</b>	ND < 0.6	ND < 0.3	<b>10.5</b>	ND < 0.5	ND < 0.5	ND < 0.5	ND < 100	ND < 50	ND < 50	NT	NT
	1st Quarterly	3rd Quarter	8/3/2002	<b>91</b>	ND < 0.3	ND < 0.3	ND < 0.6	ND < 0.3	<b>114</b>	ND < 0.5	<b>7.5</b>	ND < 0.5	ND < 100	ND < 50	ND < 50	NT	NT
	2nd Quarterly	4th Quarter	11/4/2002	<b>90.4</b>	ND < 0.3	ND < 0.3	ND < 0.6	ND < 0.3	<b>94.7</b>	ND < 0.5	<b>7.6</b>	ND < 0.5	ND < 100	ND < 50	ND < 50	ND < 0.5	ND < 0.5
	3rd Quarterly	1st Quarter	2/5/2003	ND < 50	ND < 0.5	ND < 0.5	ND < 1	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 50	ND < 50	ND < 500	ND < 0.5	ND < 0.5
	4th Quarterly	2nd Quarter	5/12/2003	ND < 50	ND < 0.5	ND < 0.5	ND < 1	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 50	ND < 50	ND < 500	ND < 0.5	ND < 0.5
	5th Quarterly	3rd Quarter	8/2/2003	ND < 50	ND < 0.5	ND < 0.5	ND < 1.0	ND < 0.5	<b>23</b>	ND < 0.5	<b>1.0</b>	ND < 0.5	ND < 50	ND < 50	ND < 500	ND < 0.5	ND < 0.5
	6th Quarterly	4th Quarter	11/8/2003	ND < 50	ND < 0.5	ND < 0.5	ND < 1.0	ND < 0.5	<b>88</b>	ND < 0.5	<b>3.5</b>	ND < 0.5	ND < 50	ND < 50	ND < 500	ND < 0.5	ND < 0.5
	7th Quarterly	1st Quarter	2/5/2004	ND < 50	ND < 0.5	ND < 0.5	ND < 1.0	ND < 0.5	<b>0.5</b>	ND < 0.5	ND < 0.5	ND < 0.5	ND < 50	ND < 50	ND < 500	ND < 0.5	ND < 0.5
	8th Quarterly	2nd Quarter	5/4/2004	ND < 50	ND < 0.5	ND < 0.5	ND < 1.0	ND < 0.5	<b>0.5</b>	ND < 0.5	ND < 0.5	ND < 0.5	ND < 50	ND < 50	ND < 500	ND < 0.5	ND < 0.5
	9th Quarterly	3rd Quarter	8/9/2004	ND < 50	ND < 0.5	ND < 0.5	ND < 1.5	ND < 0.5	<b>34.0</b>	ND < 0.5	<b>1.2</b>	ND < 0.5	ND < 50	<b>160</b>	ND < 500	ND < 0.5	ND < 0.5
	10th Quarterly	4th Quarter	11/5/2004	ND < 50	ND < 0.5	ND < 0.5	ND < 1.5	ND < 0.5	<b>14</b>	ND < 0.5	ND < 0.5	ND < 0.5	ND < 50	ND < 50	ND < 500	ND < 0.5	ND < 0.5
	11th Quarterly	1st Quarter	2/6/2005	ND < 50	ND < 0.5	ND < 0.5	ND < 1.0	ND < 0.5	ND < 1.0	ND < 0.5	ND < 0.5	ND < 0.5	ND < 50.0	ND < 50	ND < 50	----	----
	12th Quarterly	2nd Quarter	5/13/2005	ND < 50	ND < 0.5	ND < 0.5	ND < 1.0	ND < 0.5	ND < 1.0	ND < 0.5	ND < 0.5	ND < 0.5	ND < 50.0	ND < 50	ND < 50	----	----
MW-2	Well Installation	2nd Quarter	5/1/2002	<b>498</b>	ND < 0.3	ND < 0.3	<b>3.9</b>	<b>1.3</b>	<b>1,380</b>	ND < 0.5	<b>552</b>	ND < 0.5	ND < 100	ND < 50	ND < 50	NT	NT
	1st Quarterly	3rd Quarter	8/3/2002	<b>8,870</b>	<b>15.7</b>	<b>0.5</b>	<b>3.9</b>	<b>2.2</b>	<b>8,160</b>	ND < 0.5	<b>3,460</b>	ND < 0.5	ND < 100	ND < 50	ND < 50	NT	NT
	2nd Quarterly	4th Quarter	11/4/2002	<b>674</b>	<b>28.3</b>	ND < 0.3	ND < 0.6	ND < 0.3	<b>1,130</b>	ND < 0.5	<b>526</b>	ND < 0.5	ND < 50	ND < 50	ND < 50	ND < 0.5	ND < 0.5
	3rd Quarterly	1st Quarter	2/5/2003	<b>1,200</b>	<b>0.5</b>	ND < 0.5	ND < 1	ND < 0.5	<b>1,900</b>	ND < 0.5	<b>800</b>	<b>4.9</b>	<b>690</b>	ND < 50	ND < 500	ND < 0.5	ND < 0.5
	4th Quarterly	2nd Quarter	5/12/2003	<b>540</b>	ND < 50	ND < 50	ND < 100	ND < 50	<b>730</b>	ND < 50	<b>140</b>	ND < 50	ND < 500	ND < 50	ND < 500	ND < 50	ND < 50
	5th Quarterly	3rd Quarter	8/2/2003	ND < 5,000	ND < 50	ND < 50	ND < 100	ND < 50	<b>1,200</b>	ND < 50	<b>430</b>	ND < 50	ND < 500	ND < 500	ND < 500	ND < 50	ND < 50
	6th Quarterly	4th Quarter	11/8/2003	<b>790</b>	ND < 50	ND < 50	ND < 100	ND < 50	<b>4,200</b>	ND < 50	<b>1,800</b>	ND < 50	ND < 500	<b>150</b>	ND < 500	ND < 50	ND < 50
	7th Quarterly	1st Quarter	2/5/2004	<b>440</b>	ND < 50	<b>85</b>	<b>120</b>	ND < 50	<b>1,700</b>	ND < 50	<b>860</b>	ND < 50	ND < 500	<b>93</b>	ND < 500	ND < 50	ND < 50
	8th Quarterly	2nd Quarter	5/4/2004	<b>1,300</b>	ND < 50	ND < 50	ND < 10.0	ND < 50	<b>1,200</b>	ND < 50	<b>530</b>	ND < 50	ND < 500	<b>190</b>	ND < 500	ND < 50	ND < 50
	9th Quarterly	3rd Quarter	8/9/2004	<b>1,900</b>	ND < 50	ND < 50	ND < 15.0	ND < 50	<b>2,700</b>	ND < 50	<b>1,100</b>	<b>7.2</b>	<b>730</b>	<b>420</b>	ND < 500	ND < 50	ND < 50
	10th Quarterly	4th Quarter	11/5/2004	<b>1,400</b>	<b>5.8</b>	ND < 50	ND < 15.0	ND < 50	<b>970</b>	ND < 50	<b>460</b>	ND < 50	<b>230</b>	<b>160</b>	ND < 500	ND < 50	ND < 50
	11th Quarterly	1st Quarter	2/6/2005	<b>1,230</b>	ND < 0.5	ND < 0.5	ND < 1.0	ND < 0.5	<b>1,170</b>	ND < 0.5	<b>504</b>	<b>3.6</b>	<b>279</b>	<b>208</b>	<b>166</b>	----	----
	12th Quarterly	2nd Quarter	5/13/2005	<b>658</b>	ND < 2.0	ND < 2.0	ND < 4.0	ND < 2.0	<b>533</b>	ND < 2.0	<b>241</b>	ND < 2.0	ND < 200	<b>136</b>	<b>120</b>	----	----
MW-3	Well Installation	2nd Quarter	5/1/2002	<b>102</b>	<b>2.9</b>	ND < 0.3	<b>5.0</b>	<b>0.8</b>	<b>153</b>	ND < 0.5	<b>46.3</b>	ND < 0.5	ND < 100	ND < 50	ND < 50	NT	NT
	1st Quarterly	3rd Quarter	8/3/2002	<b>8,260</b>	<b>383</b>	<b>145</b>	<b>1,970</b>	<b>420</b>	<b>4,000</b>	ND < 0.5	<b>1,580</b>	ND < 0.5	ND < 100	<b>916</b>	ND < 50	NT	NT
	2nd Quarterly	4th Quarter	11/4/2002	<b>537</b>	<b>30.8</b>	<b>0.7</b>	<b>39.5</b>	<b>24.9</b>	<b>928</b>	ND < 0.5	<b>358</b>	ND < 0.5	ND < 50	ND < 50	ND < 50	ND < 0.5	ND < 0.5
	3rd Quarterly	1st Quarter	2/5/2003	ND < 50	ND < 0.5	ND < 0.5	ND < 1	ND < 0.5	<b>100</b>	ND < 0.5	<b>27</b>	ND < 0.5	<b>17</b>	ND < 50	ND < 500	<b>1.6</b>	ND < 0.5
	4th Quarterly	2nd Quarter	5/12/2003	ND < 50	ND < 0.5	ND < 0.5	ND < 1	ND < 0.5	<b>28</b>	ND < 0.5	<b>5.5</b>	ND < 0.5	ND < 50	ND < 50	ND < 500	<b>1.2</b>	ND < 0.5
	5th Quarterly	3rd Quarter	8/2/2003	<b>6,400</b>	<b>75</b>	ND < 50	<b>1,000</b>	<b>460</b>	<b>1,200</b>	ND < 50	<b>540</b>	ND < 50	<b>530</b>	ND < 50	ND < 500	ND < 50	ND < 50
	6th Quarterly	4th Quarter	11/8/2003	<b>52</b>	ND < 0.5	ND < 0.5	<b>1.2</b>	<b>0.5</b>	<b>120</b>	ND < 0.5	<b>68</b>	ND < 0.5	ND < 50	ND < 50	ND < 500	ND < 0.5	ND < 0.5
	7th Quarterly	1st Quarter	2/5/2004	ND < 50	ND < 0.5	ND < 0.5	ND < 1	ND < 0.5	<b>40</b>	ND < 0.5	<b>9.4</b>	ND < 0.5	ND < 50	ND < 50	ND < 500	<b>0.9</b>	ND < 0.5
	8th Quarterly	2nd Quarter	5/4/2004	<b>82</b>	ND < 0.5	ND < 0.5	<b>0.5</b>	ND < 0.5	<b>57</b>	ND < 0.5	<b>32</b>	ND < 0.5	ND < 50	<b>55</b>	ND < 500	ND < 0.5	ND < 0.5
	9th Quarterly	3rd Quarter	8/9/2004	<b>970</b>	<b>6.0</b>	ND < 0.5	ND < 1.5	<b>3.6</b>	<b>1,500</b>	ND < 0.5	<b>530</b>	ND < 0.5	<b>90</b>	<b>250</b>	ND < 500	<b>1.5</b>	ND < 0.5
	10th Quarterly	4th Quarter	11/5/2004	<b>100</b>	ND < 0.5	ND < 0.5	ND < 1.5	ND < 0.5	<b>63</b>	ND < 0.5	<b>19</b>	ND < 0.5	ND < 50	<b>240</b>	ND < 500	ND < 0.5	ND < 0.5
	11th Quarterly	1st Quarter	2/6/2005	<b>183</b>	ND < 0.5	ND < 0.5	ND < 1.0	ND < 0.5	<b>172</b>	ND < 0.5	<b>56.1</b>	ND < 0.5	ND < 50	<b>51</b>	<b>95</b>	----	----
	12th Quarterly	2nd Quarter	5/13/2005	<b>183</b>	ND < 1.2	ND < 1.2	ND < 2.5	ND < 1.2	<b>163</b>	ND < 1.2	<b>52.6</b>	ND < 1.2	ND < 125	<b>70</b>	<b>84</b>	----	----

TPHg: Total petroleum hydrocarbons as gasoline

MTBE: Methyl tertiary butyl ether

DIPE: Diisopropyl ether

TAME: Tertiary amyl methyl ether

TPHd: Total petroleum hydrocarbons as diesel

NT: Not tested.

TBA: Tertiary butanol

ETBE: Ethyl tertiary butyl ether

TPHmo: Total petroleum hydrocarbons as motor oil

ppb: parts per billion = µg/l = .001 mg/l = 0.001 ppm.

ND: Not detected. Sample was detected at or below the method detection limit as shown.



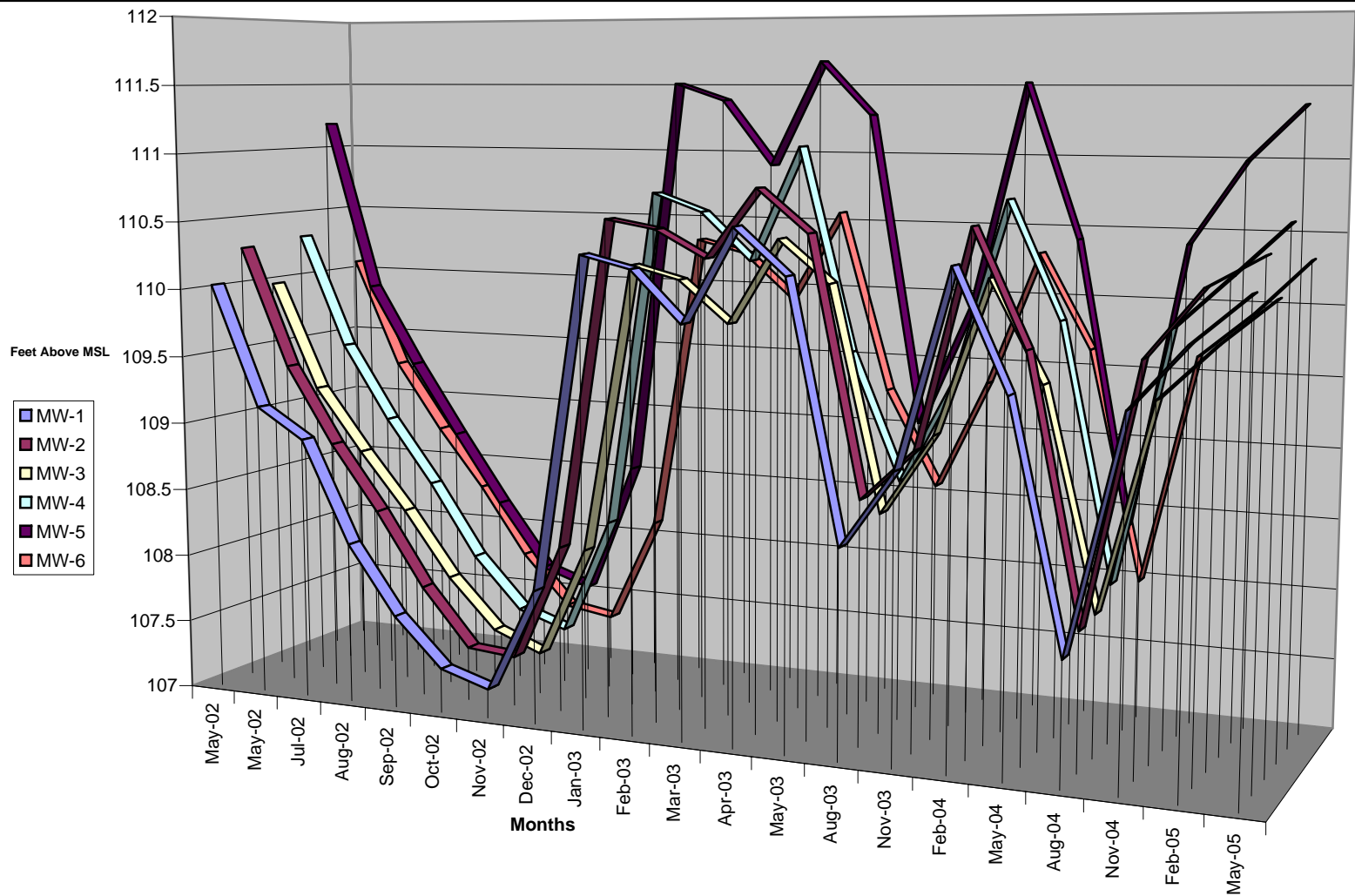
**Table 2 (cont.)**  
**Groundwater Analytical Results from Monitoring Wells**  
 Bigfoot Gas  
 2801 Central Avenue  
 McKinleyville, California 95519

Sample Location	Sample Event	Annual Quarter	Sample Date	TPHg (ppb)	Benzene (ppb)	Toluene (ppb)	Xylenes (ppb)	Ethylbenzene (ppb)	MTBE (ppb)	DIPE (ppb)	TAME (ppb)	ETBE (ppb)	TBA (ppb)	TPHd (ppb)	TPHmo (ppb)	EDC (ppb)	EDB (ppb)
MW-4	Well Installation	2nd Quarter	5/1/2002	7,970	157	356	1,270	483	ND < 20	ND < 5	ND < 5	ND < 5	ND < 1,000	489	ND < 50	NT	NT
	1st Quarterly	3rd Quarter	8/3/2002	9,150	193	720	2,430	1,080	53	ND < 15	ND < 15	ND < 15	ND < 5,000	2,770	ND < 50	NT	NT
	2nd Quarterly	4th Quarter	#####	6,090	207	343	712	530	ND < 2.0	ND < 0.5	ND < 0.5	ND < 0.5	ND < 50	159	ND < 50	ND < 0.5	ND < 0.5
	3rd Quarterly	1st Quarter	2/5/2003	20,000	170	120	890	600	ND < 5.0	ND < 5.0	ND < 5.0	ND < 5.0	ND < 50	2,000	ND < 500	ND < 5.0	ND < 5.0
	4th Quarterly	2nd Quarter	#####	6,200	96	77	248	220	ND < 50	ND < 50	ND < 50	ND < 50	ND < 500	680	ND < 500	ND < 50	ND < 50
	5th Quarterly	3rd Quarter	8/2/2003	7,700	130	59	406	470	31	ND < 5.0	20	ND < 5.0	ND < 50	ND < 50	ND < 500	ND < 5.0	ND < 5.0
	6th Quarterly	4th Quarter	#####	7,900	260	190	385	480	56	ND < 5.0	ND < 5.0	ND < 5.0	ND < 50	500	ND < 500	ND < 5.0	ND < 5.0
	7th Quarterly	1st Quarter	2/5/2004	7,600	180	110	334	460	29	ND < 5.0	ND < 5.0	ND < 5.0	ND < 50	ND < 50	ND < 500	ND < 5.0	ND < 5.0
	8th Quarterly	2nd Quarter	5/4/2004	8,000	130	140	504	420	19	ND < 5.0	ND < 5.0	ND < 5.0	ND < 50	1,300	ND < 500	ND < 5.0	ND < 5.0
	9th Quarterly	3rd Quarter	8/9/2004	5,600	120	44	302	360	67	ND < 5.0	13	ND < 5.0	ND < 50	850	ND < 500	ND < 5.0	ND < 5.0
	10th Quarterly	4th Quarter	#####	58	1.0	ND < 0.5	ND < 1.5	ND < 0.5	6.7	ND < 0.5	2.8	ND < 0.5	ND < 5.0	120	ND < 500	ND < 0.5	ND < 0.5
	11th Quarterly	1st Quarter	2/6/2005	6,230	83.5	120	602	343	11.5	ND < 2.0	ND < 2.0	ND < 2.0	ND < 200	729	121	----	----
	12th Quarterly	2nd Quarter	#####	3,950	31.4	80.4	493	193	ND < 5.0	ND < 2.5	ND < 2.5	ND < 2.5	ND < 250	708	106	----	----
MW-5	Well Installation	2nd Quarter	5/1/2002	63,800	ND < 150	1,270	19,500	1,720	ND < 1,000	ND < 250	ND < 250	ND < 250	ND < 50,000	4,420	396	NT	NT
	1st Quarterly	3rd Quarter	8/3/2002	30,500	ND < 15	486	17,700	1,760	ND < 25	ND < 15	ND < 15	ND < 15	ND < 5,000	9,630	ND < 50	NT	NT
	2nd Quarterly	4th Quarter	#####	81,000	789	ND < 300	24,600	3,710	2,330	ND < 500	1,570	ND < 500	ND < 100,000	3,870	ND < 50	ND < 500	ND < 500
	3rd Quarterly	1st Quarter	2/5/2003	78,000	51	1,600	16,800	1,600	ND < 50	ND < 50	ND < 50	ND < 50	ND < 500	ND < 50	ND < 500	ND < 50	ND < 50
	4th Quarterly	2nd Quarter	#####	43,000	ND < 50	790	13,400	1,200	ND < 50	ND < 50	ND < 50	ND < 50	ND < 500	4,100	ND < 500	ND < 50	ND < 50
	5th Quarterly	3rd Quarter	8/2/2003	17,000	ND < 50	120	3,890	400	ND < 50	ND < 50	ND < 50	ND < 50	ND < 500	ND < 50	ND < 500	ND < 50	ND < 50
	6th Quarterly	4th Quarter	#####	43,000	ND < 50	760	16,100	1,500	ND < 50	ND < 50	ND < 50	ND < 50	ND < 500	4,100	ND < 500	ND < 50	ND < 50
	7th Quarterly	1st Quarter	2/5/2004	39,000	50	1,400	22,500	2,000	ND < 50	ND < 50	ND < 50	ND < 50	ND < 500	ND < 50	ND < 500	ND < 50	ND < 50
	8th Quarterly	2nd Quarter	5/4/2004	54,000	ND < 50	720	12,800	1,300	ND < 50	ND < 50	ND < 50	ND < 50	ND < 500	19,000	ND < 500	ND < 50	ND < 50
	9th Quarterly	3rd Quarter	8/9/2004	37,000	ND < 50	320	10,000	1,100	ND < 50	ND < 50	ND < 50	ND < 50	ND < 500	8,500	ND < 500	ND < 50	ND < 50
	10th Quarterly	4th Quarter	#####	9,800	ND < 50	68	1,940	170	ND < 50	ND < 50	ND < 50	ND < 50	ND < 500	890	ND < 500	ND < 50	ND < 50
	11th Quarterly	1st Quarter	2/6/2005	13,800	5.5	174	4,090	407	ND < 10	ND < 5.0	ND < 5.0	ND < 5.0	ND < 500	1,650	151	----	----
	12th Quarterly	2nd Quarter	#####	12,600	ND < 10	197	4,050	393	ND < 20	ND < 10	ND < 10	ND < 10	ND < 1,000	1,190	113	----	----
MW-6	Well Installation	2nd Quarter	5/1/2002	3,750	845	576	1,070	155	980	ND < 0.5	791	ND < 0.5	ND < 100	ND < 50	ND < 50	NT	NT
	1st Quarterly	3rd Quarter	8/3/2002	11,800	508	62	8,630	1,640	750	ND < 15	300	ND < 15	ND < 5,000	1,900	ND < 50	NT	NT
	2nd Quarterly	4th Quarter	#####	9,480	535	35.2	3,420	743	1,330	ND < 0.5	558	ND < 0.5	ND < 50	190	ND < 50	ND < 0.5	ND < 0.5
	3rd Quarterly	1st Quarter	2/5/2003	4,500	20	ND < 5.0	583	190	ND < 5.0	ND < 5.0	17	ND < 5.0	ND < 50	1,200	ND < 500	ND < 5.0	ND < 5.0
	4th Quarterly	2nd Quarter	#####	2,200	22	1.2	244	160	68	ND < 0.5	14	ND < 0.5	60	280	ND < 500	0.9	ND < 0.5
	5th Quarterly	3rd Quarter	8/2/2003	ND < 50	ND < 0.5	ND < 0.5	ND < 1.0	ND < 0.5	1	ND < 0.5	ND < 0.5	ND < 0.5	ND < 5.0	ND < 50	2,500	ND < 0.5	ND < 0.5
	6th Quarterly	4th Quarter	#####	ND < 50	ND < 0.5	ND < 0.5	ND < 1.0	ND < 0.5	1.3	ND < 0.5	ND < 0.5	ND < 0.5	ND < 5.0	ND < 50	ND < 500	ND < 0.5	ND < 0.5
	7th Quarterly	1st Quarter	2/5/2004	110	4.2	ND < 0.5	ND < 1.0	ND < 0.5	16	ND < 0.5	5.6	ND < 0.5	ND < 5.0	ND < 50	ND < 500	ND < 0.5	ND < 0.5
	8th Quarterly	2nd Quarter	5/4/2004	2,200	25	2.4	200.5	4.0	69	ND < 0.5	17	ND < 0.5	27	590	ND < 500	ND < 0.5	ND < 0.5
	9th Quarterly	3rd Quarter	8/9/2004	880	14	ND < 5.0	ND < 15	ND < 5.0	220	ND < 5.0	16	ND < 5.0	280	470	ND < 500	ND < 5.0	ND < 5.0
	10th Quarterly	4th Quarter	#####	110	3.6	ND < 0.5	ND < 1.5	ND < 0.5	16	ND < 0.5	3.2	ND < 0.5	ND < 5.0	1,000	ND < 500	ND < 0.5	ND < 0.5
	11th Quarterly	1st Quarter	2/6/2005	ND < 50	ND < 0.5	ND < 0.5	ND < 1.0	ND < 0.5	3.6	ND < 0.5	1.0	ND < 0.5	ND < 50	ND < 50	86	----	----
	12th Quarterly	2nd Quarter	#####	ND < 50	ND < 0.5	ND < 0.5	ND < 1.0	ND < 0.5	2.1	ND < 0.5	0.8	ND < 0.5	ND < 50	ND < 50	71	----	----

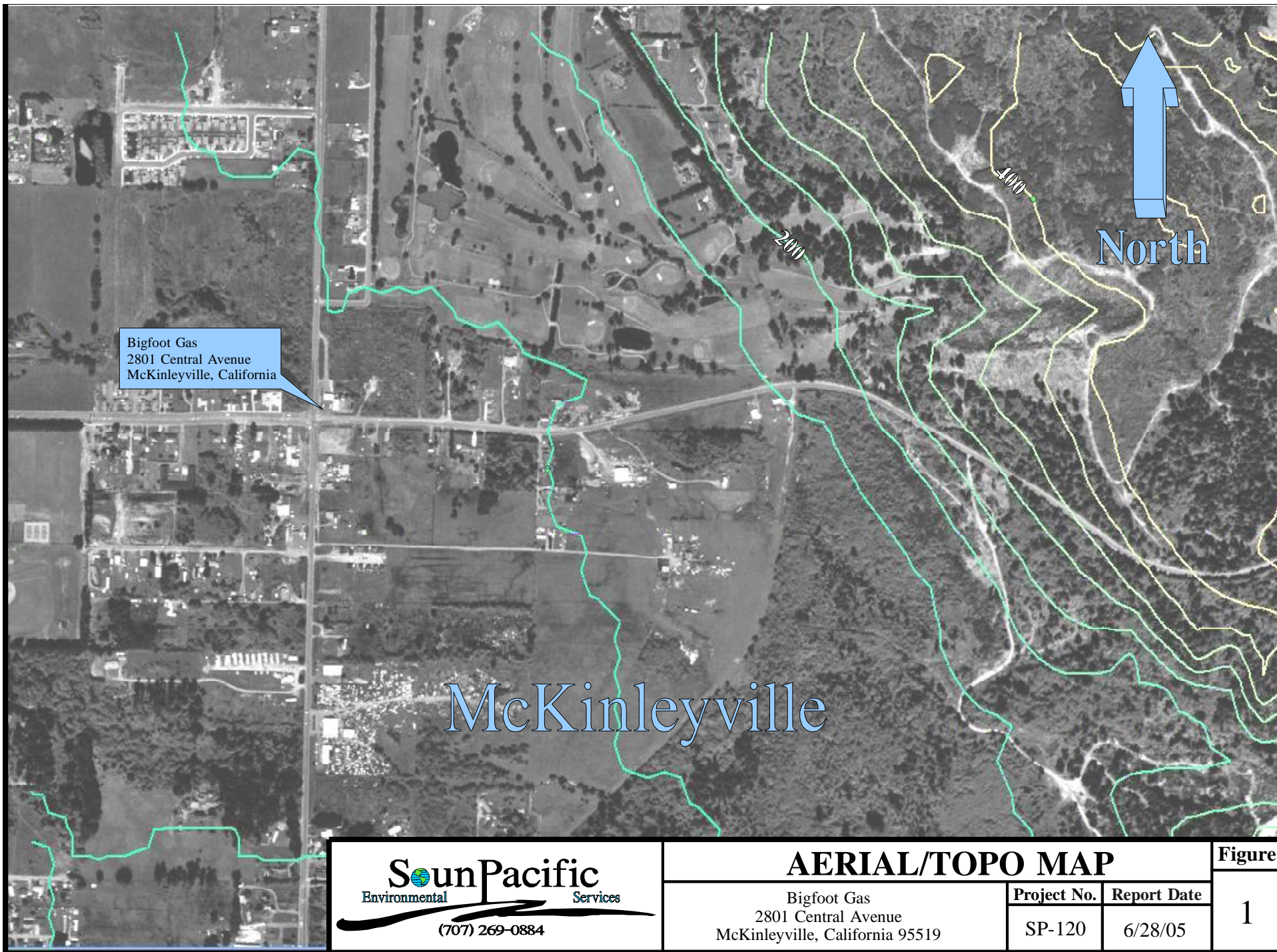
TPHg: Total petroleum hydrocarbons as gasoline  
 MTBE: Methyl tertiary butyl ether  
 DIPE: Diisopropyl ether  
 TAME: Tertiary amyl methyl ether  
 TPHd: Total petroleum hydrocarbons as diesel  
 NT: Not tested.

TBA: Tertiary butanol  
 ETBE: Ethyl tertiary butyl ether  
 TPHmo: Total petroleum hydrocarbons as motor oil  
 ppb: parts per billion = µg/l = .001 mg/l = 0.001 ppm.  
 ND: Not detected. Sample was detected at or below the method detection limit as shown.

**Chart 1**  
**Hydrograph**  
Bigfoot Gas  
2801 Central Avenue  
McKinleyville, California 95519

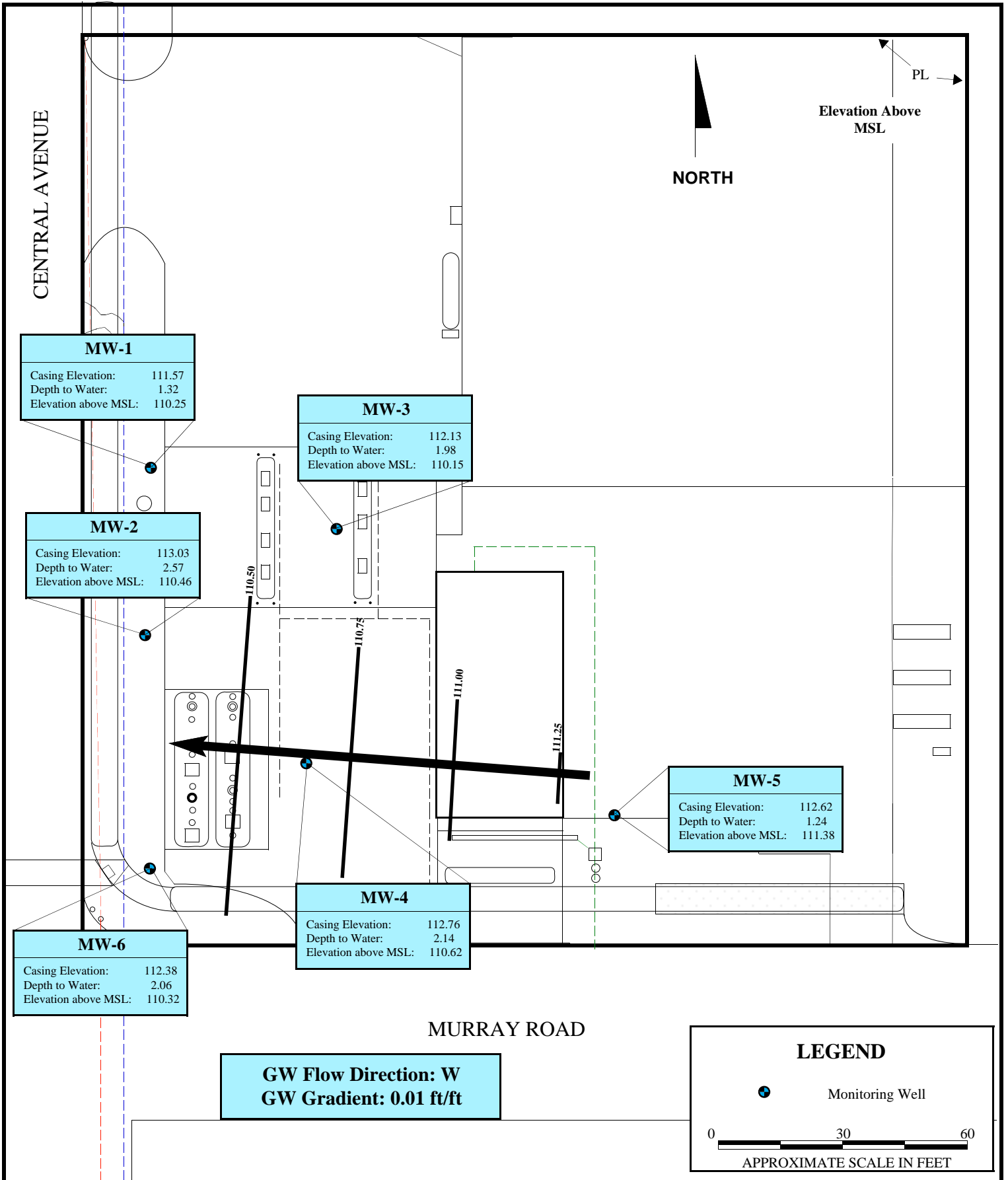


# Figures



	<b>AERIAL/TOPO MAP</b>		<b>Figure</b>
	Bigfoot Gas 2801 Central Avenue McKinleyville, California 95519	<b>Project No.</b>	<b>Report Date</b>
		SP-120	6/28/05
			1





# **GROUNDWATER LEVEL CONTOUR MAP** **May 2005**

Figure

3

Bigfoot Gas  
2801 Central Avenue  
McKinleyville, California 95519

Project No.  
SP-120

Report Date  
6/28/05



CENTRAL AVENUE

PL →

NORTH

**Groundwater Results  
MW-1**

All Results Non-Detect

**Groundwater Results  
MW-2**

TPHg	658	ppb
MTBE	533	ppb
TAME	241	ppb
TPHd	136	ppb
TPHmo	120	ppb

**Groundwater Results  
MW-3**

TPHg	183	ppb
MTBE	163	ppb
TAME	52.6	ppb
TPHd	70	ppb
TPHmo	84	ppb

**Groundwater Results  
MW-5**

TPHg	12,600	ppb
BTXE	4,640	ppb
TPHd	1,190	ppb
TPHmo	113	ppb

**Groundwater Results  
MW-4**

TPHg	3,950	ppb
BTXE	797.8	ppb
TPHd	708	ppb
TPHmo	106	ppb

**Groundwater Results  
MW-6**

MTBE	2.1	ppb
TAME	0.8	ppb
TPHmo	71	ppb

OFFICE

MURRAY ROAD

**LEGEND**

Monitoring Well

0 30 60  
APPROXIMATE SCALE IN FEET

**GROUNDWATER ANALYTICAL RESULTS**

Figure

4

Environmental

Services

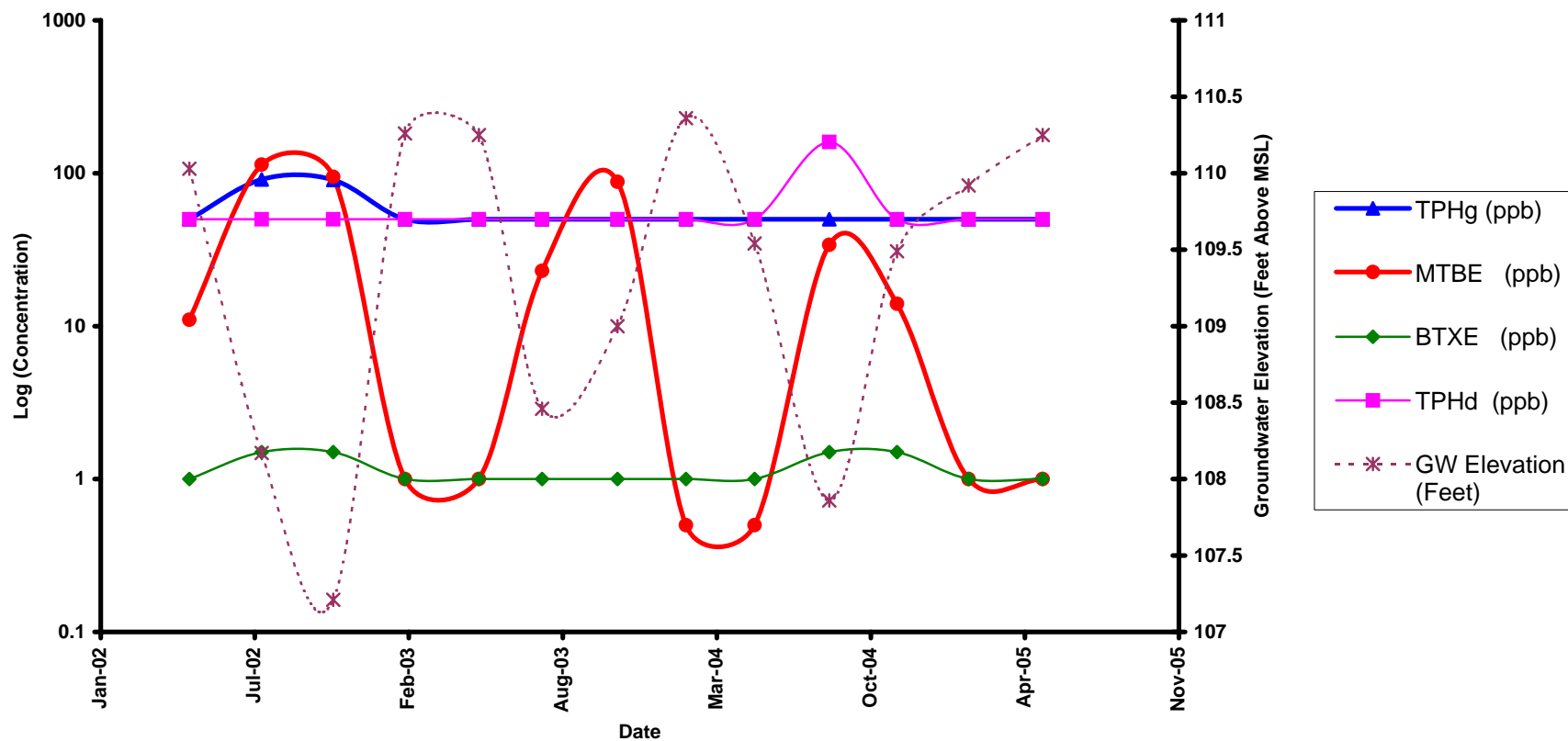
Bigfoot Gas  
2801 Central Avenue  
McKinleyville, California 95519

Project No.

SP-120

Report Date

6/28/05



**SounPacific**  
 Environmental Services  
 (707) 269-0884

### MW-1 HYDROCARBON CONCENTRATIONS VS. TIME

Bigfoot Gas  
 2801 Central Avenue  
 McKinleyville, California 95519

Project No.

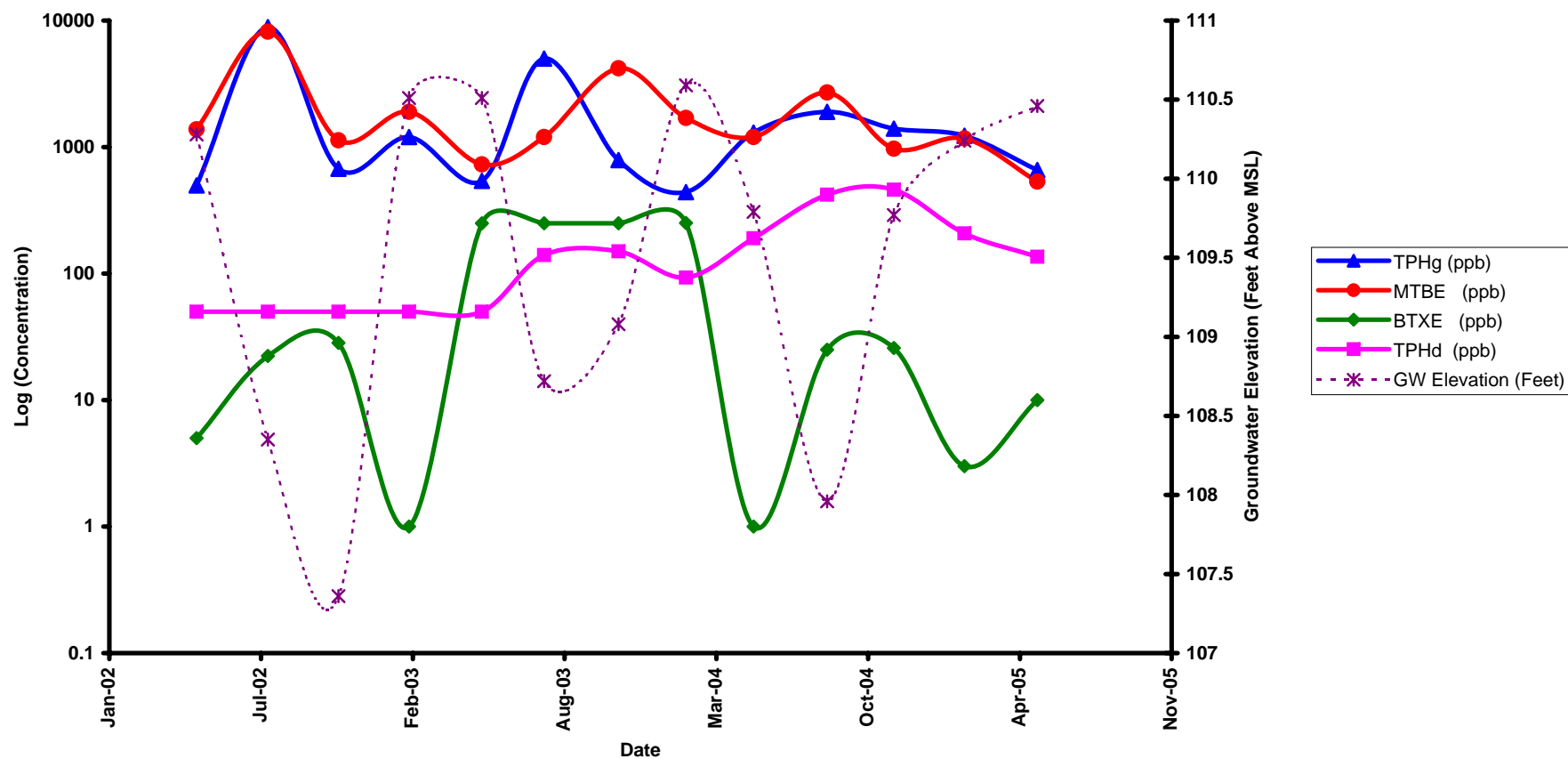
SP-120

Date

6/28/2005

Figure

5



**Soun Pacific**  
 Environmental Services  
 (707) 269-0884

### MW-2 HYDROCARBON CONCENTRATIONS VS. TIME

Bigfoot Gas  
 2801 Central Avenue  
 McKinleyville, California 95519

Project No.

SP-120

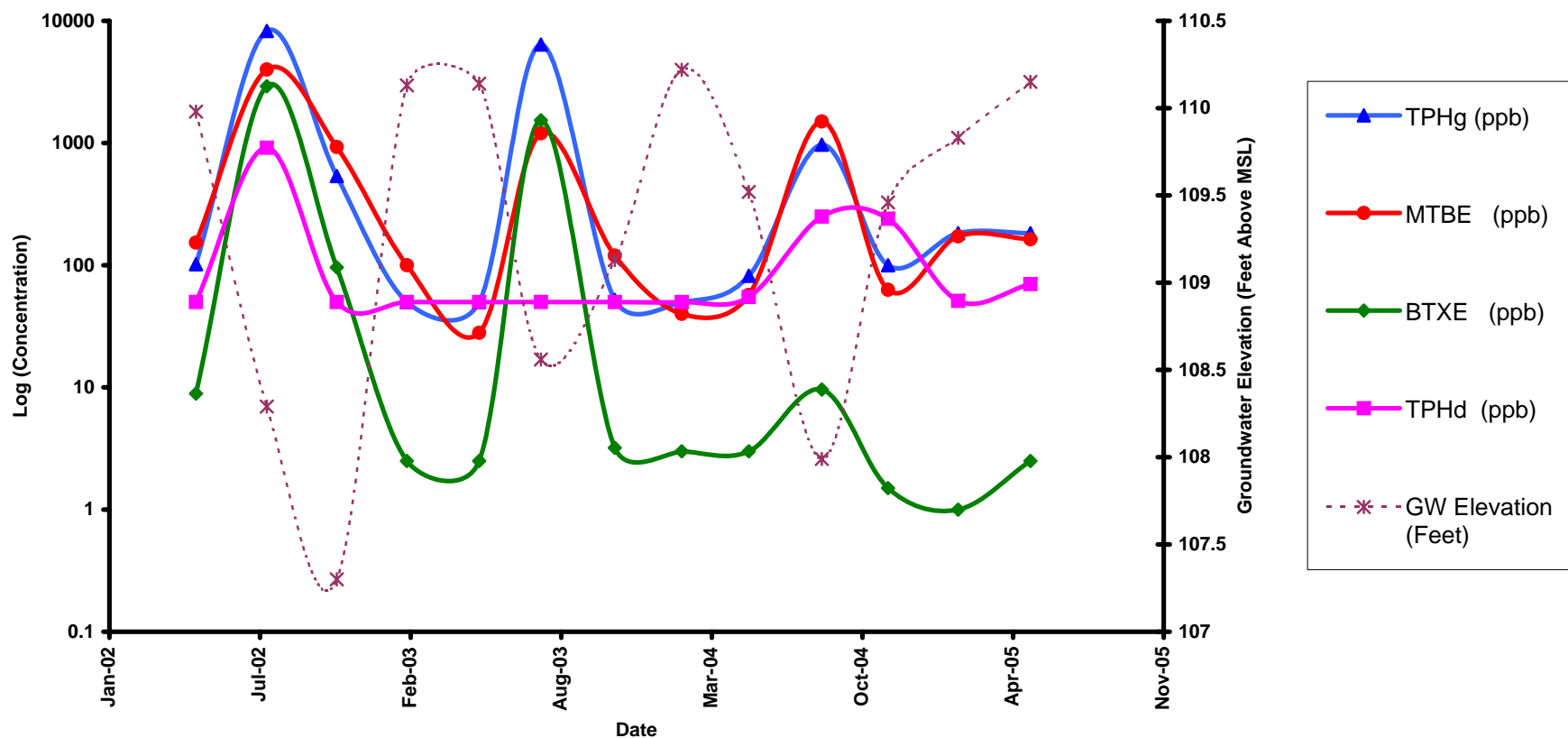
Date

6/28/2005

Figure

6





### MW-3 HYDROCARBON CONCENTRATIONS VS. TIME

Bigfoot Gas  
2801 Central Avenue  
McKinleyville, California 95519

Project No.

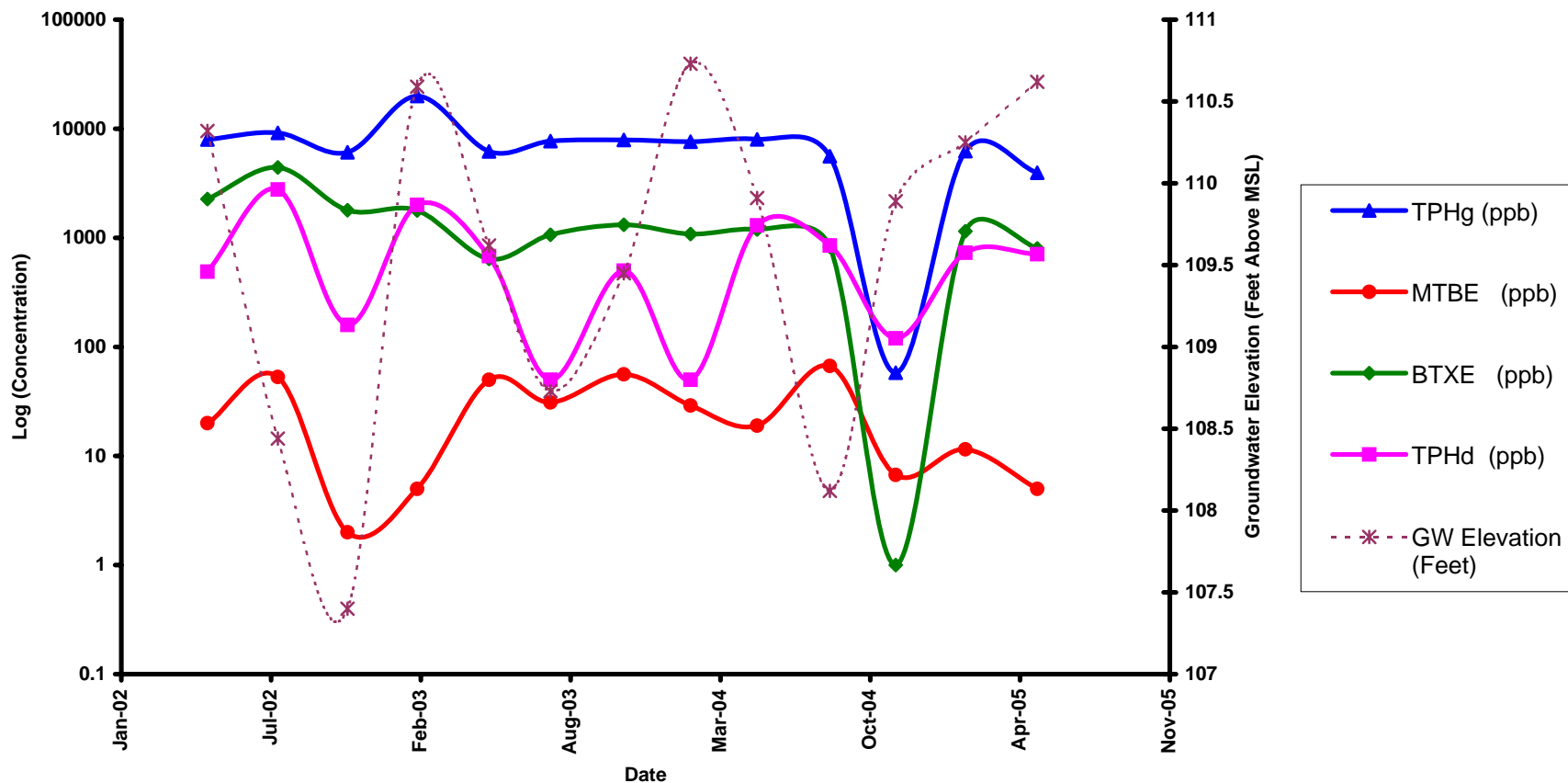
SP-120

Date

6/28/2005

Figure

7



### MW-4 HYDROCARBON CONCENTRATIONS VS. TIME

Bigfoot Gas  
2801 Central Avenue  
McKinleyville, California 95519

Project No.

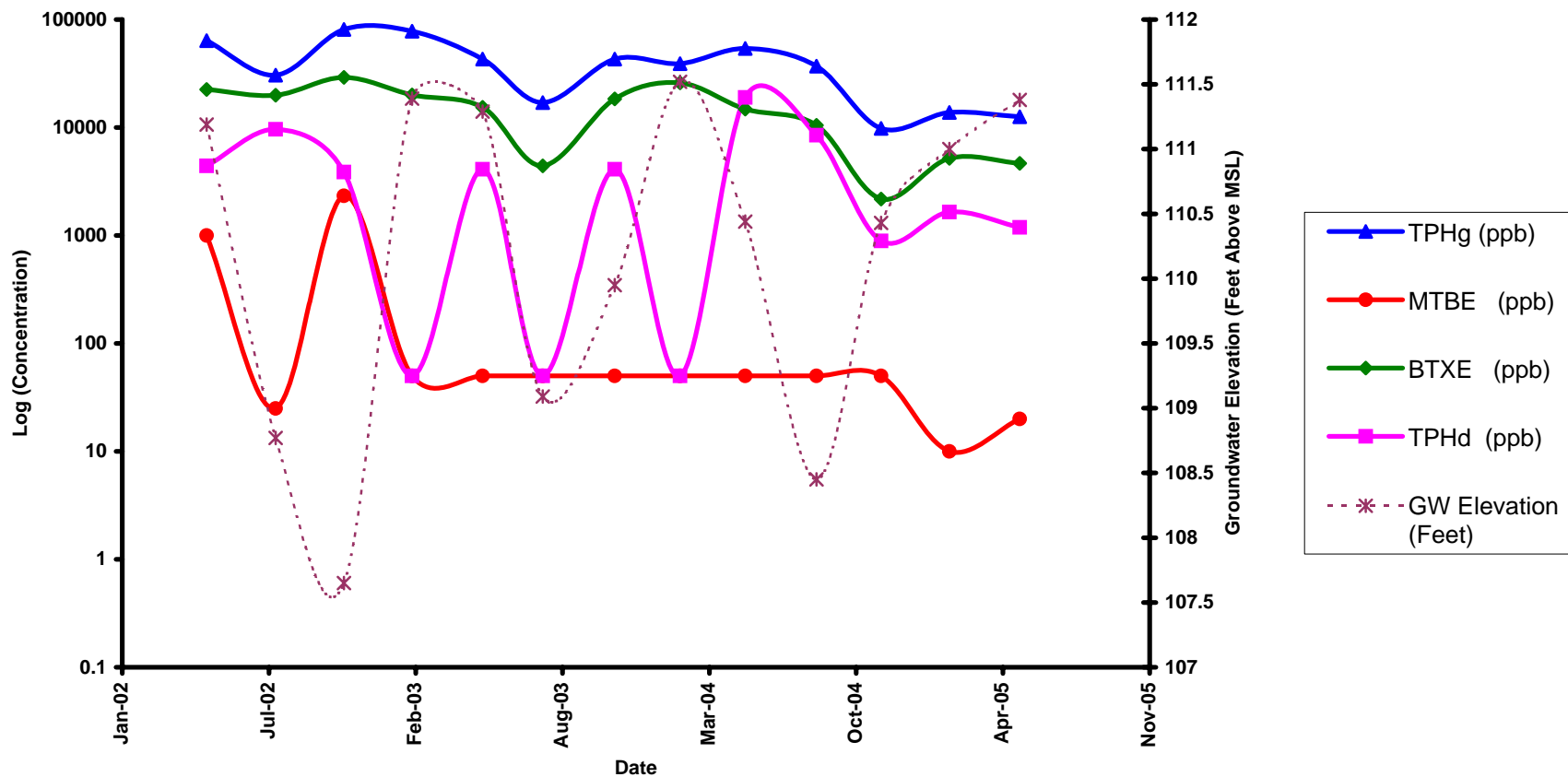
SP-120

Date

6/28/2005

Figure

8



**SounPacific**  
 Environmental Services  
 (707) 269-0884

### MW-5 HYDROCARBON CONCENTRATIONS VS. TIME

Bigfoot Gas  
 2801 Central Avenue  
 McKinleyville, California 95519

Project No.

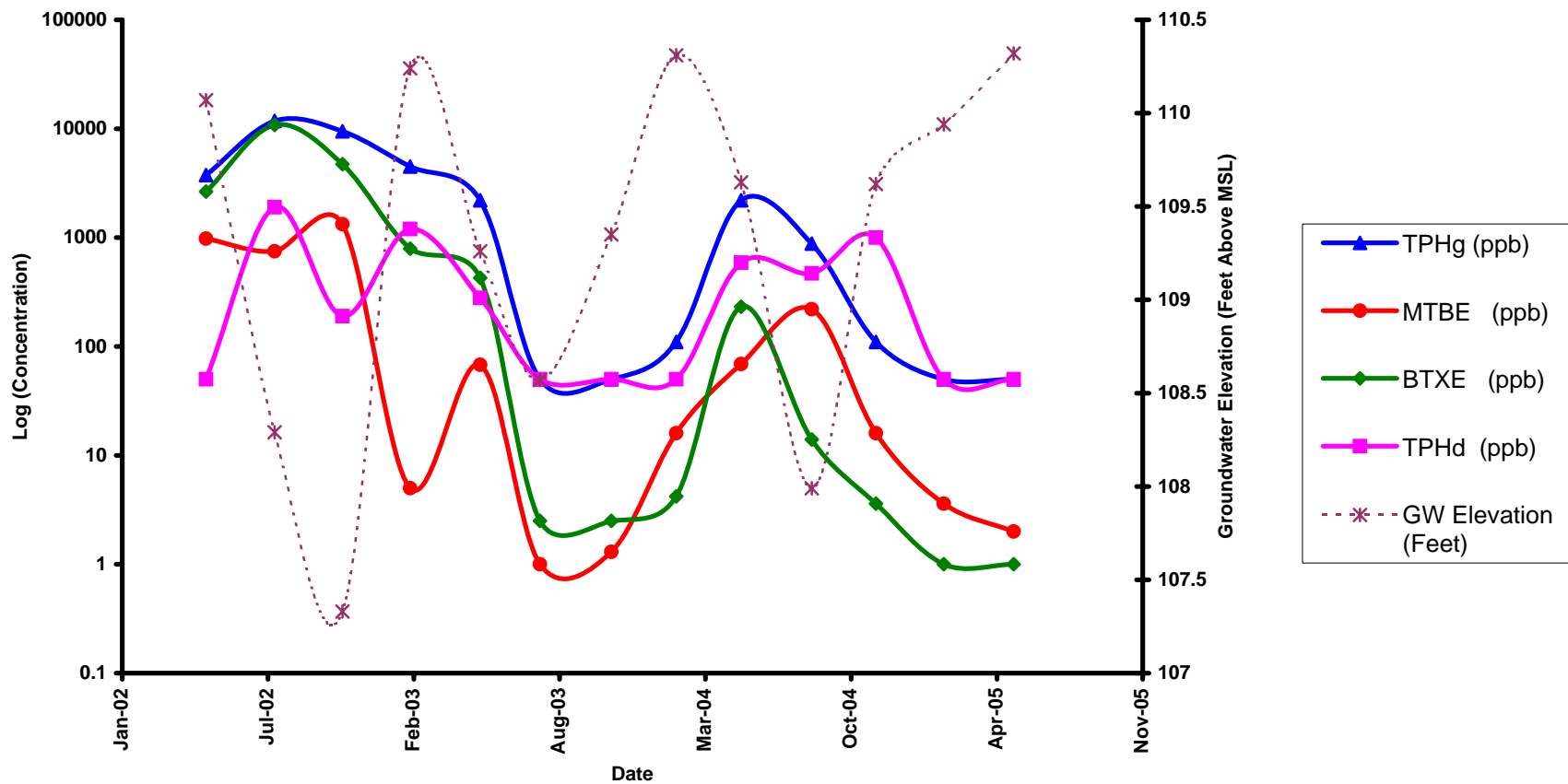
SP-120

Date

6/28/2005

Figure

9



### MW-6 HYDROCARBON CONCENTRATIONS VS. TIME

Bigfoot Gas  
2801 Central Avenue  
McKinleyville, California 95519

Project No.

SP-120

Date

6/28/2005

Figure

10

# Appendices

# **Appendix A**

June 01, 2005

**Lab ID: 5050780**

Andy Malone  
SOUNPACIFIC  
4612 GREENWOOD HEIGHTS DR  
KNEELAND, CA 95549  
RE: BIGFOOT GAS SP-120

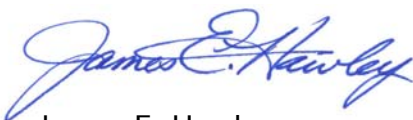
Dear Andy Malone,

Enclosed are the analysis results for Work Order number 5050780. All analysis were performed under strict adherence to our established Quality Assurance Plan. Any abnormalities are listed in the qualifier section of this report.

If you have any questions regarding these results, please feel free to contact us at any time. We appreciate the opportunity to service your environmental testing needs.

Sincerely,

For



James E. Hawley  
Laboratory Director

California ELAP Certification Number 1677

**Report To:** SOUNPACIFIC  
4612 GREENWOOD HEIGHTS DR  
KNEELAND, CA 95549

**Attention:** Andy Malone  
**Project:** BIGFOOT GAS SP-120

**Description:** MW-1

**Matrix:** Water

**Lab ID:** 5050780-01

**Lab No:** 5050780  
**Reported:** 06/01/05  
**Phone:** 707-269-0884  
**P.O. #**

**Sampled:** 05/13/05 00:00

**Received:** 05/18/05 12:31

## Volatile Organic Compounds

<u>Analyte</u>	<u>Units</u>	<u>Results</u>	<u>Qualifier</u>	<u>MDL</u>	<u>RL</u>	<u>Method</u>	<u>Analyzed</u>	<u>Prepared</u>	<u>Batch</u>
Gasoline	ug/l	ND			50.0	EPA 8015/8260	05/18/05	05/18/05	B5E0454
Benzene	"	ND			0.5	"	"	"	"
Ethylbenzene	"	ND			0.5	"	"	"	"
Toluene	"	ND			0.5	"	"	"	"
Xylenes (total)	"	ND			1.0	"	"	"	"
Methyl tert-butyl ether	"	ND			1.0	"	"	"	"
Di-isopropyl ether	"	ND			0.5	"	"	"	"
Tert-amyl methyl ether	"	ND			0.5	"	"	"	"
Ethyl tert-butyl ether	"	ND			0.5	"	"	"	"
Tert-butyl alcohol	"	ND			50.0	"	"	"	"
<i>Surrogate: 4-Bromofluorobenzene</i>		92.8 %			43-155	"	"	"	"

## TPH Diesel & Motor Oil

<u>Analyte</u>	<u>Units</u>	<u>Results</u>	<u>Qualifier</u>	<u>MDL</u>	<u>RL</u>	<u>Method</u>	<u>Analyzed</u>	<u>Prepared</u>	<u>Batch</u>
Diesel	ug/l	ND			50	EPA 8015 MOD	05/24/05	05/19/05	B5E0468
Motor Oil	"	ND			50	"	"	"	"
<i>Surrogate: Octacosane</i>		105 %			50-150	"	"	"	"

Approved By

Basic Laboratory, Inc.

California D.O.H.S. Cert #1677



**Report To:** SOUNPACIFIC  
4612 GREENWOOD HEIGHTS DR  
KNEELAND, CA 95549

**Attention:** Andy Malone  
**Project:** BIGFOOT GAS SP-120

**Description:** MW-2

**Matrix:** Water

**Lab ID:** 5050780-02

**Lab No:** 5050780  
**Reported:** 06/01/05  
**Phone:** 707-269-0884  
**P.O. #**

**Sampled:** 05/13/05 00:00

**Received:** 05/18/05 12:31

## Volatile Organic Compounds

<u>Analyte</u>	<u>Units</u>	<u>Results</u>	<u>Qualifier</u>	<u>MDL</u>	<u>RL</u>	<u>Method</u>	<u>Analyzed</u>	<u>Prepared</u>	<u>Batch</u>
Gasoline	ug/l	658	R-01		200	EPA 8015/8260	05/18/05	05/18/05	B5E0454
Benzene	"	ND	R-01		2.0	"	"	"	"
Ethylbenzene	"	ND	R-01		2.0	"	"	"	"
Toluene	"	ND	R-01		2.0	"	"	"	"
Xylenes (total)	"	ND	R-01		4.0	"	"	"	"
Methyl tert-butyl ether	"	533	R-01		20.0	"	05/18/05	"	"
Di-isopropyl ether	"	ND	R-01		2.0	"	05/18/05	"	"
Tert-amyl methyl ether	"	241	R-01		2.0	"	"	"	"
Ethyl tert-butyl ether	"	ND	R-01		2.0	"	"	"	"
Tert-butyl alcohol	"	ND	R-01		200	"	"	"	"
Surrogate: 4-Bromofluorobenzene		92.8 %			43-155	"	"	"	"

## TPH Diesel & Motor Oil

<u>Analyte</u>	<u>Units</u>	<u>Results</u>	<u>Qualifier</u>	<u>MDL</u>	<u>RL</u>	<u>Method</u>	<u>Analyzed</u>	<u>Prepared</u>	<u>Batch</u>
Diesel	ug/l	136	D-02		50	EPA 8015 MOD	05/24/05	05/19/05	B5E0468
Motor Oil	"	120	D-02		50	"	"	"	"
Surrogate: Octacosane		100 %			50-150	"	"	"	"

Approved By

Basic Laboratory, Inc.

California D.O.H.S. Cert #1677





Report To: SOUNPACIFIC  
4612 GREENWOOD HEIGHTS DR  
KNEELAND, CA 95549  
Attention: Andy Malone  
Project: BIGFOOT GAS SP-120

Lab No: 5050780  
Reported: 06/01/05  
Phone: 707-269-0884  
P.O. #

Description: MW-5  
Matrix: Water  
Lab ID: 5050780-05

Sampled: 05/13/05 00:00  
Received: 05/18/05 12:31

## Volatile Organic Compounds

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
Gasoline	ug/l	12600	R-01		1000	EPA 8015/8260	05/18/05	05/18/05	B5E0454
Benzene	"	ND	R-01		10.0	"	"	"	"
Ethylbenzene	"	393	R-01		10.0	"	"	"	"
Toluene	"	197	R-01		10.0	"	"	"	"
Xylenes (total)	"	4050	R-01		40.0	"	05/24/05	"	"
Methyl tert-butyl ether	"	ND	R-01		20.0	"	05/18/05	"	"
Di-isopropyl ether	"	ND	R-01		10.0	"	"	"	"
Tert-amyl methyl ether	"	ND	R-01		10.0	"	"	"	"
Ethyl tert-butyl ether	"	ND	R-01		10.0	"	"	"	"
Tert-butyl alcohol	"	ND	R-01		1000	"	"	"	"
Surrogate: 4-Bromofluorobenzene		102 %			43-155	"	"	"	"

## TPH Diesel & Motor Oil

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
Diesel	ug/l	1190	D-01, D-02		50	EPA 8015 MOD	05/24/05	05/19/05	B5E0468
Motor Oil	"	113			50	"	"	"	"
Surrogate: Octacosane		90.0 %			50-150	"	"	"	"

Approved By

Basic Laboratory, Inc.

California D.O.H.S. Cert #1677

**Report To:** SOUNPACIFIC  
4612 GREENWOOD HEIGHTS DR  
KNEELAND, CA 95549

**Attention:** Andy Malone  
**Project:** BIGFOOT GAS SP-120

**Description:** MW-6

**Matrix:** Water

**Lab ID:** 5050780-06

**Lab No:** 5050780  
**Reported:** 06/01/05  
**Phone:** 707-269-0884  
**P.O. #**

**Sampled:** 05/13/05 00:00

**Received:** 05/18/05 12:31

## Volatile Organic Compounds

<u>Analyte</u>	<u>Units</u>	<u>Results</u>	<u>Qualifier</u>	<u>MDL</u>	<u>RL</u>	<u>Method</u>	<u>Analyzed</u>	<u>Prepared</u>	<u>Batch</u>
Gasoline	ug/l	ND			50.0	EPA 8015/8260	05/18/05	05/18/05	B5E0454
Benzene	"	ND			0.5	"	"	"	"
Ethylbenzene	"	ND			0.5	"	"	"	"
Toluene	"	ND			0.5	"	"	"	"
Xylenes (total)	"	ND			1.0	"	"	"	"
<b>Methyl tert-butyl ether</b>	"	<b>2.1</b>			1.0	"	"	"	"
Di-isopropyl ether	"	ND			0.5	"	"	"	"
<b>Tert-amyl methyl ether</b>	"	<b>0.8</b>			0.5	"	"	"	"
Ethyl tert-butyl ether	"	ND			0.5	"	"	"	"
Tert-butyl alcohol	"	ND			50.0	"	"	"	"
<i>Surrogate: 4-Bromofluorobenzene</i>		<i>96.0 %</i>			<i>43-155</i>	"	"	"	"

## TPH Diesel & Motor Oil

<u>Analyte</u>	<u>Units</u>	<u>Results</u>	<u>Qualifier</u>	<u>MDL</u>	<u>RL</u>	<u>Method</u>	<u>Analyzed</u>	<u>Prepared</u>	<u>Batch</u>
Diesel	ug/l	ND			50	EPA 8015 MOD	05/24/05	05/19/05	B5E0468
<b>Motor Oil</b>	"	<b>71</b>			50	"	"	"	"
<i>Surrogate: Octacosane</i>		<i>101 %</i>			<i>50-150</i>	"	"	"	"

Approved By

Basic Laboratory, Inc.

California D.O.H.S. Cert #1677

**Report To:** SOUNPACIFIC  
4612 GREENWOOD HEIGHTS DR  
KNEELAND, CA 95549  
**Attention:** Andy Malone  
**Project:** BIGFOOT GAS SP-120

**Lab No:** 5050780  
**Reported:** 06/01/05  
**Phone:** 707-269-0884  
**P.O. #**

### Notes and Definitions

D-01	This sample appears to contain volatile range organics.
D-02	Hydrocarbon pattern present in the requested fuel quantitation range but does not resemble the pattern of the requested fuel.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
R-01	The Reporting Limit and Detection Limit for this analyte have been raised due to necessary sample dilution.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the detection limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
<	Less than reporting limit
≤	Less than or equal to reporting limit
>	Greater than reporting limit
≥	Greater than or equal to reporting limit
MDL	Method Detection Limit
RL/ML	Minimum Level of Quantitation
MCL/AL	Maximum Contaminant Level/Action Level
mg/kg	Results reported as wet weight
TTLC	Total Threshold Limit Concentration
STLC	Soluble Threshold Limit Concentration
TCLP	Toxicity Characteristic Leachate Procedure

---

Approved By

Basic Laboratory, Inc.

California D.O.H.S. Cert #1677

2218 Railroad Avenue, Redding, CA 96001 (530) 243-7234 FAX 243-7494

INSTRUCTIONS, TERMS, CONDITIONS ON BACK

## **Appendix B**





# **Standard Operating Procedures**

## **Groundwater Level Measurements and Free Phase Hydrocarbon Measurements**

All SounPacific staff and contractors shall adopt the following procedures any time that groundwater elevations are determined for the purposes of establishing groundwater gradient and direction, and prior to any sampling event.

Wells are to be tested for free phase hydrocarbons (free product) before the first development or sampling of any new well, and in any well that has historically contained free product.

### **Equipment Checklist**

- ☐ Combination water level / free phase hydrocarbon indicator probe (probe)
- ☐ Gauging Data / Purge Calculations Sheet
- ☐ Pencil or Pen/sharpie
- ☐ Disposable Gloves
- ☐ Distilled Water and or know water source on site that is clean
- ☐ Alconox (powder) or Liquinox (liquid) non-phosphate cleaners—do not use soap!
- ☐ Buckets or Tubs for decontamination station
- ☐ Tools necessary to access wells
- ☐ Site Safety Plan
- ☐ This Standard Operating Procedure
- ☐ Notify Job site business that you will be arriving to conduct work.

### **Procedure**

1. Review Site Safety Plan and utilize personal protection appropriate for the contaminants that may be encountered.
2. Access and open all monitoring wells to be measured. Allow wells to equilibrate for approximately 15 minutes before taking any measurements.

3. Decontaminate probe with Alconox or Liquinox solution, and rinse with distilled water.
4. Determine the diameter of the well to be measured and indicate this on the Gauging Data / Purge Calculations Sheet.
5. Words of caution: Please be careful with water level and product meters probes are not attached with high strength material so please make sure to avoid catching the end on anything in the well and make sure not to wind reel to the point that it could pull on the probe. ***If product is suspect in a well, go to step 6, if no product is suspected go to step 7 below.***
6. **When product is present or suspected:** use the product level meter. Clip the static charge clamp to the side of the well casing. Then lower probe into the well through the product/water interface about one foot if possible. Then slowly raise the probe back up through the product/water interface layer and record the level as the tone changes from solid to broken-record this level in the Gauging Data / Purge Calculations Sheet to the nearest 0.01 foot (DTP). Continue to raise the probe up through the product until the tone stops completely-record this level on the Gauging Data / Purge Calculations Sheet to the nearest 0.01 foot (DTW). Then go to step 8.
7. **When no product is present or suspected:** If no free product is present, record the depth of the water (to the nearest 0.01 foot) relative to the painted black mark on the top of the well casing. Leave the probe in the well just a hair above the water level to ensure the well as equilibrated. As the well rises, the tone will sound. Make sure no increase in water levels have occurred in over a ten-minute period. Water levels can lower as well as rise. Make sure you note when the level you keep lowering the probe to has remained stable for at least ten minutes. Once this has been accomplished, please record this level in the Gauging Data / Purge Calculations Sheet to the nearest 0.01 foot (DTW).
8. Turn off the probe, and use the probe to determine the depth to the bottom of the well relative to the top of the well casing. This is the depth to bottom measurement (DTB).
9. Decontaminate probe and tape by washing in an Alconox/Liquinox solution (***read directions on solution for ratio of water to cleanser***) and use the toothbrush provided to remove any foreign substance from the probe and tape. Then triple rinse probe and tape with clean water and then proceed to take measurements in the next well.
10. If sampling is to occur, proceed to implement SounPacific's Standard Operating Procedure for Monitoring Well Purging and Sampling. If no sampling is to be performed, close and secure all wells and caps.



## Standard Operating Procedures

### Monitoring Well Purging and Groundwater Sampling

All SounPacific employees and contractors shall adopt the following procedures any time that groundwater samples are to be taken from an existing groundwater monitoring well.

Prior to the implementation of these procedures, the groundwater level **MUST** be measured and the presence of free phase hydrocarbons determined in accordance with SounPacific's Standard Operating Procedures for Groundwater Level Measurements and Free Phase Hydrocarbon Measurements.

### Equipment Checklist

- ☐ Gauging Data / Purge Calculations Sheet used for water level determination
- ☐ Chain of Custody Form
- ☐ pH/ Conductivity / Temperature meter
- ☐ Pencil or Pen
- ☐ Indelible Marker
- ☐ Calculator
- ☐ Disposable Gloves
- ☐ Distilled Water
- ☐ Alconox/liquinox liquid or powdered non-phosphate cleaner
- ☐ Buckets or Tubs for decontamination station
- ☐ Bottom-filling bailer or pumping device for purging
- ☐ Disposable bottom-filling bailer and emptying device for sampling
- ☐ String, twine or fishing line for bailers
- ☐ Sample containers appropriate for intended analytical method (check with lab)
- ☐ Sample labels
- ☐ Site Safety Plan
- ☐ Tools necessary to access wells
- ☐ Drum space on site adequate for sampling event

### **Procedure**

1. Review Site Safety Plan and utilize personal protection appropriate for the contaminants that may be encountered.
2. Measure groundwater levels and check for the presence of free product in accordance with the Standard Operating Procedures for Groundwater Level Measurements and Free Phase Hydrocarbon Measurements.

### **Purging**

3. Calculate and record the volume of standing water in each well using the information provided on the Gauging Data / Purge Calculations sheet.  
 $(DTB-DTW) \times \text{Conversion Factor} = \text{Casing Volume}$ .
4. The purge volume shall be at least three times and no more than seven times the volume of standing water (the casing volume).
5. Purge the well by bailing or pumping water from the well into a calibrated receptacle, such as a five gallon bucket or tub with markings to indicate one gallon increments. Collect purgeate in a 55 gallon labeled drum and store on site. Drum labels should include the date, contents, site number, and SounPacific's name and telephone number.
6. Take measurements of pH, conductivity, temperature, and visual observations to verify the stabilization of these parameters. At least five measurements of these parameters should be made throughout the purging process. The parameters shall be considered stabilized if successive measurements vary by less than 0.25 pH units, 10% of conductivity in  $\mu\text{S}$ , and  $1^{\circ}\text{C}$  (or  $1.8^{\circ}\text{F}$ ). Continue purging until at least three times the casing volume has been removed, and the measured parameters have stabilized as indicated above. Do not exceed seven casing volumes.
7. Take a final depth to groundwater measurement and calculate the casing volume of the recharged well. Ideally, the casing volume should have recharged to at least 80% of the original measured casing volume before sampling commences. If due to slow recharge rates it is not feasible to wait for the well to fully recharge, then note this on the Gauging Data / Purge Calculation Sheet and proceed to sample following the procedure below.

## **Sampling**

8. **After completing groundwater measurement, and checking for free product if necessary, in accordance with SounPacific's Standard Operating Procedures for Groundwater Level Measurements and Free Phase Hydrocarbon Measurements, and after purging monitoring wells as described above, groundwater samples may be collected.**
9. Slowly lower a clean, previously unused disposable bailer into the well water approximately half of the bailer length, and allow the bailer to slowly fill.
10. Withdraw the full bailer from the monitoring well and utilize the included (clean and unused) bottom-emptying device to fill the necessary sample containers, and seal the container with the included PTFE (Teflon) lined cap.
11. When filling VOAs, fill the VOA completely full, with the meniscus rising above the rim of the bottle. Carefully cap the VOA and invert it and gently tap it to determine whether air bubbles are trapped inside. If the VOA contains air bubbles, refill the VOA and repeat this step.
12. All samples shall be labeled with the Sample ID, the Sample Date, and the Sample Location or Project Number. Use an indelible marker for writing on sample labels.
13. Record all pertinent sample data on the Chain of Custody.
14. Place samples in an ice chest cooled to 4°C with ice or "blue ice". Bottles should be wrapped in bubble wrap, and VOA's should be inserted in a foam VOA holder to protect against breakage. Samples are to be kept at 4°C until delivered to the laboratory. Any transference of sample custody shall be indicated on the Chain of Custody with the appropriate signatures as necessary.
15. Utilize clean, previously unused gloves, bailer and line, and bottom-emptying device for each well sampled.
16. When finished with all sampling, close and secure all monitoring wells.
17. Leave the site cleaner than when you arrived and drive safely.

# Appendix C

## GAUGING DATA/PURGE CALCULATIONS

Job Site:

Big Foot Gas

Job No.:

SP-120

Event:

Quarterly Monitoring

Date:

5-13-05

**SounPacific**  
Environmental Services  
(707) 269-0884

WELL NO.	DIA (in.)	DTB (ft.)	DTW (ft.)	ST (ft.)	CV (gal.)	PV (gal.)	SPL (ft.)	Bailer Loads	Notes
MW-1	2	11.81	1.32	10.49	1.68	5.04			
MW-2	2	9.12	2.57	6.55	1.05	3.15			
MW-3	2	11.42	1.98	9.44	1.51	4.53			
MW-4	2	11.24	2.14	9.1	1.46	4.4			
MW-5	2	11.3	1.24	10.6	1.61	4.83			
MW-6	2	10.95	2.06	8.89	1.42	4.27			

## Explanation:

DIA = Well Diameter

DTB = Depth to Bottom

DTW = Depth to Water

ST = Saturated Thickness (DTB-DTW)

CV = Casing Volume (ST x cf)

PV = Purge Volume (standard 3 x CV, well development 10 x CV)

SPL = Thickness of Separate Phase Liquid

## Conversion Factors (cf):

2 in. dia. well cf = 0.16 gal./ft.

4 in. dia. well cf = 0.65 gal./ft.

6 in. dia. well cf = 1.44 gal./ft.

Sampler:

Tien-yu Tai

05 May 15 06:37P

Tien-yu Tai

707-825-9228

## Well Gauging/Sampling Report

Sheet 1 of 6

Date: 5-13-05 Project Name: Big Foot Gas Project No: SP-120 Well Number: MWH

Analyses Tested: TPHg, TPHd, TPHmo, BTEX, SOXys

Sample Containers: 3 HQ VOA 2 1-L Bottles

Purge Technique: ☐ Bailer ☒ Pump

Sounder Used: ☐ Water Meter ☐ Interface Meter

### Water & Free Product Levels

Time	Depth to Water	Depth to Product	Notes
12.46P	1.51 ft		No Sheen
1.16	1.32		No Sheen
1.52	1.32		
End			

### Field Measurements

Time	Total Vol. Removed (gal)	pH	Temp (F)	Cond. (mcu/cm)	DO (mg/L)	DO (%)	
3.54P	0	7.41	58.81	0.179	0.88	8.8	
3.58	1.75	7.38	56.63	0.174	0.87	8.4	
4.02	3.5	7.33	56.15	0.168	0.74	7.2	
4.06	5.25	7.23	55.80	0.160	0.69	6.6	

Field Scientist: Tien-yu Tai



## Well Gauging/Sampling Report

Sheet 2 of 6

Date: 5-13-05 Project Name: Big Foot Gas Project No: SP-120 Well Number: 14W-2

Analyses Tested: TPHg, TPId, TPHme, BTXE, 5 Oxy's

Sample Containers: 3 100 VOAs, 2 1-L Bottles

Purge Technique: ☐ Bailor ☒ Pump

Sounder Used: ☐ Water Meter ☐ Interface Meter

### Water & Free Product Levels

Time	Depth to Water	Depth to Product	Notes
12.50p	3.4 ft		No sheen
1.21p	2.68 ft		No sheen
2.00p	2.58		No sheen
2.18	2.57		No sheen
End			

### Field Measurements

Time	Total Vol. Removed (gal)	pH	Temp (F)	Cond. (mc/cm)	DO (mg/L)	DO (%)	
2.47	0.0	6.78	57.77	0.542	1.78	17.5	
2.50	1.0	6.66	55.97	0.654	1.35	12.9	
2.52	2.3	6.70	55.84	0.638	1.16	11.1	
2.54	3.0	6.82	55.74	0.541	1.47	14.0	

Field Scientist: Tien-yu Tai



# Well Gauging/Sampling Report

Sheet 3 of 6

Date: 5-13-05 Project Name: Big Foot Gas Project No: SF120 Well Number: MW3

Analyses Tested: TPH, TPHd, TPHmc, STXE, 5 oxy's

Sample Containers: 3 HCL VOA 2 LL Bottles

Purge Technique: ☐ Bailor ☒ Pump

Sounder Used: ☐ Water Meter ☐ Interface Meter

## Water & Free Product Levels

Time	Depth to Water	Depth to Product	Notes
12.41P	2.1 ft		No Sheen
1.12P	1.98 ft		No Sheen
1.45P	1.98		No Sheen
End			

## Field Measurements

Time	Total Vol. Removed (gal)	pH	Temp (F)	Cond. (ms/cm)	DO (mg/L)	DO (%)	
4.26P	0	7.34	60.51	0.123	0.69	6.9	
4.31	1.5	7.00	58.55	0.290	0.51	5.0	
4.35	3.0	6.95	58.16	0.288	0.41	4.0	
4.37	4.5	6.94	58.27	0.284	0.56	5.5	

Field Scientist:

Tien-yu Tui

**Well Gauging/Sampling Report**

Sheet 4 of 6

Date: 5-13-05 Project Name: Big Foot Gas Project No: SP120 Well Number: YW-4

Analyses Tested: TPH<sub>g</sub>, TPH<sub>d</sub>, TPH<sub>mo</sub>, BTXE, SCxs

Sample Containers: 3 HDL VOA, 2 1-L Bottles

Purge Technique: ☐ Bailor ☒ Pump

Sounder Used: ☐ Water Meter ☐ Interface Meter

**Water & Free Product Levels**

Time	Depth to Water	Depth to Product	Notes
12.55P	1.5 ft		No Sheen
1.26P	2.14 ft		No Sheen
2.08P	2.14		No Sheen
End			

**Field Measurements**

Time	Total Vol. Removed (gal)	pH	Temp (F)	Cond. (ms/cm)	DO (mg/L)	DO (%)	Notes
3.19P	0	7.12	60.24	0.280	3.32	33.4	DO is high
3.23	1.5	7.07	59.80	0.279	0.66	6.6	
3.26	3.0	7.08	60.79	0.289	0.82	8.3	
3.28	4.5	7.07	59.93	0.260	0.59	5.9	

Field Scientist:

Tien-yu Tai



## Well Gauging/Sampling Report

Sheet 5 of 6

Date: 5-13-05 Project Name: Big-Tot Gas Project No: SP-120 Well Number: MW-5

Analyses Tested: TPHg, TPHd, TPHme, BTXE, 5 Cxys

Sample Containers: 3 HCL VOA, 2 1-L Bottles

Purge Technique: ☐ Bailor ☒ Pump  
Sonder Used: ☐ Water Meter ☐ Interface Meter

### Water & Free Product Levels

Time	Depth to Water	Depth to Product	Notes
1.00P	1.24 ft		Shoen
1.32P	1.26		No Shoen
End			

### Field Measurements

Time	Total Vol. Removed (gal)	pH	Temp (F)	Cond. (µs/cm)	DO (mg/L)	DO (%)	
5.25P	0	7.19	60.38	0.240	0.42	4.2	
5.29	1.6	7.12	58.99	0.243	0.60	6.0	
5.31	3.2	7.06	58.37	0.269	0.55	5.5	
5.33	4.8	7.02	58.13	0.276	0.65	6.4	

Field Scientist: Tien-yu Tien



# Well Gauging/Sampling Report

Sheet 6 of 6

Date: 5-13-05 Project Name: Big foot Gas Project No: SP-120 Well Number: 14W-6

Analyses Tested: TpH, TTHd, TPhmo, BTEX, SCXys

Sample Containers: 3 HCL VOA, 2 I-L Bottles

Purge Technique: ☐ Bailor ☒ Pump  
 Sounder Used: ☐ Water Meter ☐ Interface Meter

## Water & Free Product Levels

Time	Depth to Water	Depth to Product	Notes:
12.36 P.	2.06 ft		No Sheen -
1.06	2.06		No Sheen
End			

## Field Measurements

Time	Total Vol. Removed (gal)	pH	Temp (F)	Cond. (mc/cm)	DO (mg/L)	DO (%)	
4.53 P.	0	6.97	62.40	0.144	0.31	3.2	
5.00	1.4	6.82	58.96	0.177	0.37	3.7	
5.03	2.8	6.83	58.86	0.176	0.43	4.3	
5.06	4.2	6.84	58.93	0.177	0.47	4.7	

Field Scientist: Lien-pu Tu

## Well Gauging/Sampling Report

Sheet 6 of 6

Date: 5-13-05 Project Name: Big Foot Gas Project No: SP120 Well Number: 14W-6

Analyses Tested: TPH, TPAH, TPHmo, BTEX, SVs

Sample Containers: 3 HCL VOA, 2 1-L Bottles

Purge Technique: ☐ Bailor ☒ Pump  
Sonder Used: ☐ Water Meter ☐ Interface Meter

### Water & Free Product Levels

Time	Depth to Water	Depth to Product	Notes
12.36 P.	2.06 ft		No Sheen
1.06	2.06		No Sheen
End			

### Field Measurements

Time	Total Vol. Removed (gal)	pH	Temp (F)	Cond. (ms/cm)	DO (mg/L)	DO (%)	
4.53 P.	0	6.97	62.40	0.144	0.31	3.2	
5.00	1.4	6.82	58.96	0.177	0.37	3.7	
5.03	2.8	6.83	58.86	0.176	0.43	4.3	
5.06	4.2	6.84	58.93	0.177	0.47	4.7	

Field Scientist: Lien-pu Tu